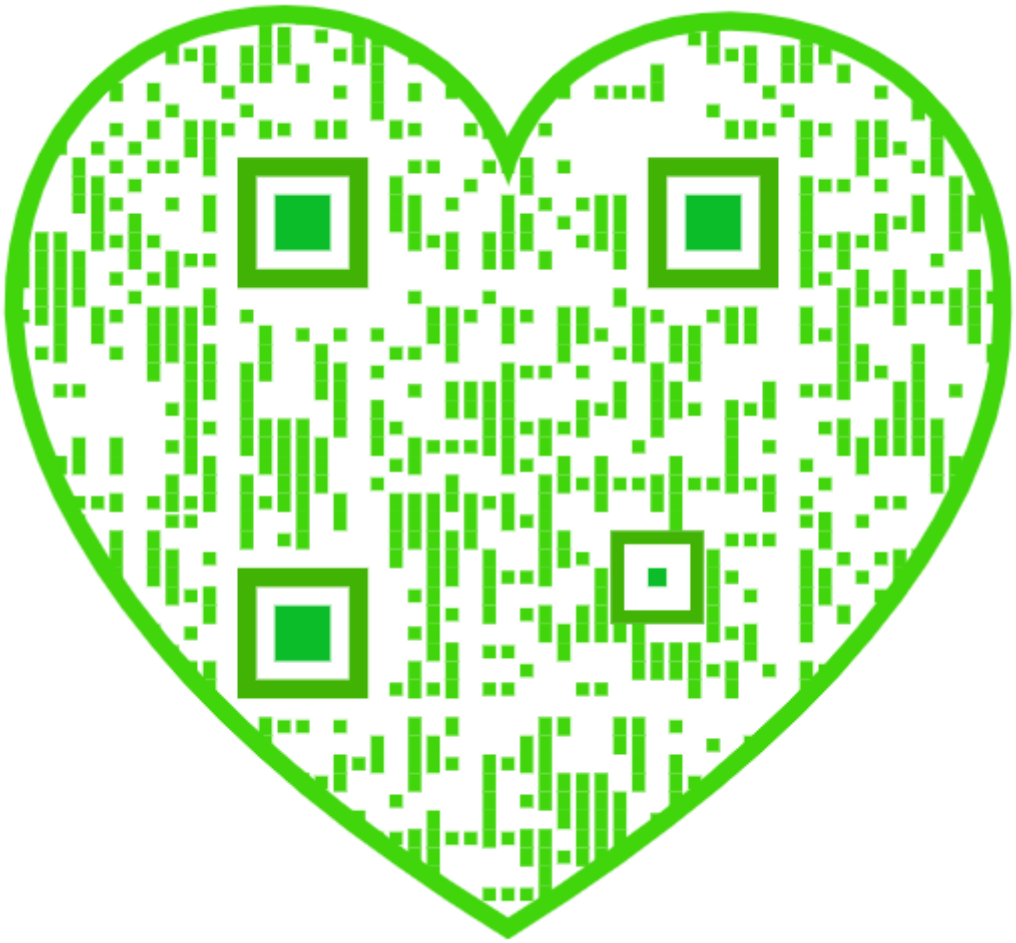

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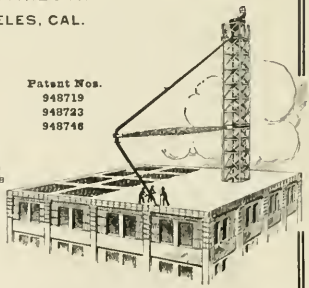

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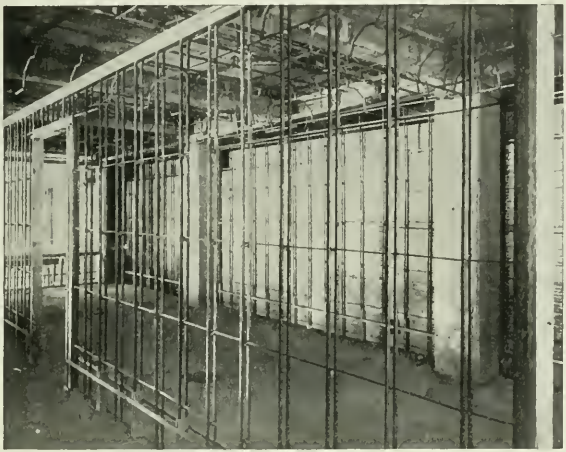

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Wallace Concrete Machinery Co.,
Monadnock Bldg., S. F.
Marsh-Capron Mixers, sold by Langford, Bacon & Myers, Rialto Bldg., S. F.

CONCRETE PILES
Harron, Rickard & McCone.
Townsend Street, San Francisco.

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

Specify... For Plastering

HOLMES DIAMOND SANTA CRUZ LIME

PHONE KEARNY 2220 The Holmes Lime Co.

Guaranteed Against Pitting or Popping Monadnock Bldg., San Franci:

ARCHITECTS' SPECIFICATION INDEX *Continued*

CONCRETE REINFORCEMENT
United States Steel Products Co.,
San Francisco, Los Angeles, Portland and Seattle.
Clinton Welded Reinforcing System.
L. A. Norris, Monadnock Bldg., S. F.
International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.
Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.
Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co....Rialto Bldg., S. F.
Twisted Bars, sold by Woods & Huddart,
444 Market St., S. F.

CONCRETE SURFACING
Colak Concrete Paint, manufactured by Pacific Colak Paint Co.,
Merchants National Bank Bldg., S. F.
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Buswell's Steel and Concrete Paints,
Oakland, Cal.
"Concreta," sold by W. P. Fuller & Co., S. F.
Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

CONTRACTORS' EQUIPMENT
C. H. & E. Mfg. Co., Inc., Milwaukee, Wis., represented by Parrott & Co., S. F., Beebe Co., Portland, A. F. George, Los Angeles, E. P. Jamison, Seattle.

CONTRACTORS, GENERAL
Commary-Peterson Co., Inc.,
46 Kearny St., S. F.
F. J. Klenck ....547 Monadnock Bldg., S. F.
F. O. Engstrum Co.,
East Fifth and Seaton Sts., Los Angeles
Foster, Vogt Co.....722 Hearst Bldg., S. F.
Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.
Geo. W. Boxton.....Hearst Bldg., S. F.
Hansen, F. L., 525 Monadnock Bldg., S. F.
Holm & Son.....Foxcroft Bldg., S. F.
Harvey A. Klyce.. ..Monadnock Bldg., S. F.
McLaren & Peterson,
706-707 Williams Bldg., S. F.
C. P. Moore Building Co.,
Monadnock Bldg., S. F.
Northern Construction Co., Mills Bldg., S. F.
Higginson Co., Inc.,
804 Humboldt Bank Bldg., S. F.
Ransome Concrete Co., 1218 Broadly, Oakland
F. J. Rickon, C. E., 1859 Geary St., S. F.
Robert Trost, 26th and Howard Sts., S. F.
Sanders, H. M., Jones and Turk Sts., S. F.
Williams Bros. & Henderson,
351 Monadnock Bldg., S. F.

CORNER BEAD
"Prescott," sold by Boyd & Moore,
356 Market St., S. F.
Union Metal Corner Company, 144 Pearl St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK
Grant Gravel Co., Williams Bldg., S. F.
Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.
Niles Sand, Gravel & Rock Co.,
Mutual Savings Bank Bldg., S. F.

CORK TILING
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. Pacific Coast office, Phelan Building, S. F., G. H. Freear, Mgr.

DAMP-PROOFING COMPOUND
Biturine Co. of America,
24 California St., S. F.
Concrewaltum Paint, made by Goheen Mfg. Co., Canton, O., sold by Sherman, Kimball & Co., Inc., S. F., A. J. Capron, Portland, and S. W. R. Dalby, Seattle, Wash.
Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Lithoid Product Company,
Merchants Exchange Bldg., S. F.
Colak Concrete Paint, manufactured by Pacific Colak Paint Co.,
Merchants National Bank Bldg., S. F.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....54 First St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.
Liquid Stone Paint Co., Phelan Bldg., S. F.

DISAPPEARING IRONING BOARDS
F. G. Cox.....933 Phelan Bldg., S. F.

DOOR HANGERS
Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.
Richards-Wilcox Mfg. Co.... ...Aurora, Ill.
Allith-Prouty Co., Danville Ill., 693 Mission St., S. F., and 412 E. 3rd St., Los Angeles

DOOR OPENER
Carlson Door Opener and Closer,
1622A Howard St., S. F.

DOORS—DISAPPEARING
Pacific Tank & Pipe Co.,231 Berry St., S. F.

DOORS AND SHUTTERS
Kinnear Steel Rolling Doors and Shutters, Lilley & Thurston Co., Rialto Bldg., S. F.

DRAWING INSTRUMENTS
Kieffel & Esser Company, Second Street,
near Market, S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents..... 356 Market St., S. F.
Wells & Spencer Machine Company,
173 Beale St., S. F.

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SANITARY FLOORING, WAINSCOT AND BASE. Laid Exclusively by
FIBRESTONE & ROOFING CO., 704 Market St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELECTRICAL CONTRACTORS
American Electrical Engineering Co.
435 Golden Gate Ave., S. F.
Butte Engineering Co..683 Howard St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Garden City Electrical Co.....San Jose, Cal.
Jno. G. Sutton Co.....243 Minna St., S. F.
Pacific Fire Extinguisher Company.
507 Montgomery St., S. F.

ELECTRIC AND GAS APPLIANCES
American Agencies, Ltd.,
501 Market St., S. F.

ELEVATORS
Otis Elevator Company.
Stockton and North Point, S. F.
Van Emon Elevator Co..54 Natoma St., S. F.
Wells & Spencer Machine Co.,
173 Beale St., S. F.

ELEVATOR DOORS
"Cross" Elevator Doors, Boyd & Moore, Inc., Agents.....356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co.,
593 Market St., S. F.

ENGINEERS
F. J. Amweg..?...700 Marston Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.
J. C. Hurley..... 12 Geary Street, S. F.
Hunter & Hudson, Monadnock Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co.,
593 Market St., S. F.

FIRE DOOR HARDWARE
Kortick-Falls Mfg. Co., 327 First St., S. F.
Allith Prouty Co., Coast agencies, 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

FIRE ESCAPES
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, 13435..370-84 Tenth St., S. F.
H. Johns-Manville Company, Branches in all Principal Coast Cities.

FIRE EXTINGUISHERS
Pacific Fire Extinguisher Co.,
507 Montgomery St., S. F.

FIREPLACE DAMPER
Head, Throat and Damper for open fireplaces, Colonial Fireplace Co., Chicago.
(See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
Gladding, McBean & Company,
Crocker Bldg., S. F.
Los Angeles Pressed Brick Co.,
Frost Bldg., L. A.
Roehling Construction Co., Crocker Bldg., S. F.
"Bestwall," manufactured by California Bestwall Co., Lilley & Thurston Co., distributors, Rialto Bldg., S. F.
Collins Metal Lath and Steel Studding, sold by Parrott & Co., S. F. and Los Angeles

FIRE-PROOF PAINT
Liquid Stone Paint Co., Phelan Bldg., S. F.

FIREPROOF PARTITIONS
Rabbitt Partition Co., 34 Ellis St., S. F.

FIXTURES—BANK, OFFICE, STORE, ETC.
Burlingame Cabinet Works,
509-511 Sixth Street, San Francisco
A. J. Forbes & Son..1530 Filbert St., S. F.
Fink & Schindler.....218 13th St., S. F.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.

FLOOR VARNISH
Bass-Hueter and Works, S. F. Pioneer Varnish
816 Mission St., S. F.
R. N. Nason & Co., 151 Potrero Ave., S. F.
Standard Varnish Works,
Chicago, New York and S. F.
Worden-Meeker Varnish Works,
S. F. and Oakland

FLOORS—CORK
Nonpariel Cork Tiling. David E. Kennedy, Inc., N. Y. Distributor for the Pacific Coast, G. H. Freear, Phelan Building, S. F.

FLOORING—MAGNESITE
Fibrestone & Roofing Co.,
704 Market St., S. F.
Mallott & Peterson,
682 Monadnock Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit,
Bowser & Co. .....612 Howard St., S. F.

GARBAGE CHÛTE
Bill & Jacobsen.....524 Pine St., S. F.

GLASS AND GLAZING
W. P. Fuller & Co.,
San Francisco, Los Angeles and Portland.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co.....153 Berry St., S. F.
California Building Material Co.,
Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
Niles Sand, Rock & Gravel Co.,
Mutual Bank Bldg., S. F.

HARD WALL PLASTER
Empire Hard Wall Plaster, sold by Pacific Portland Cement Co., Pacific Bldg., S. F.

HARDWARE
A. W. Pike.....711 Mission St., S. F.
Pacific Hardware & Steel Co...S. F. and L. A.
Richards-Wilcox Mfg. Co. . . Aurora, Ill.
Russwin Hardware, Joost Bros., S. F.
Window Adjusters, mfrd. by The Casement Co. . . 175 State St., North Chicago, Ill.
Allith-Prouty Co., 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

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Controlling for this territory leading Eastern types of Boilers' Engines, Pumps, Air Compressors Heating Apparatus, Etc.

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F. M. SPENCER, Successor
173-177 BEALE ST., SAN FRANCISCO
REPRESENTING
WESTERN ELEVATOR COMPANY
REPAIRS, INSPECTIONS AND DUMB WAITERS
TELEPHONES: KEARNY 664 HOME J 1124

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD FLOORING
Strable Mfg. Co.....Oakland, Cal.
New York Hardwood Floor Co.,
784 O'Farrell St., S. F.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.
Hardwood Interior Co., 554 Bryant St., S. F.

HARDWOOD LUMBER
Parrott & Co.....320 California St., S. F.
Strable Mfg. Co.,
First St., betw. Washington & Clay, Oakland.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HEATERS—AUTOMATIC
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
Humphrey Co.,
563 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co. .....667 Mission St., S. F.

HEATING ENGINEERS
General Engineering Co.,
231-35 Natoma St., S. F.

HEATING EQUIPMENT—VACUUM, ETC.
C. A. Dunham Co., Marshalltown, Iowa.
Western Division Office,
Monadnock Bldg., S. F.
Guernsey & Wheeler, ...Rialto Bldg., S. F.

HEATING AND VENTILATING
Atlas Heating & Ventilating Co.,
Fourth and Freelon Sts., San Francisco.
Fess System Co.....220 Natoma St., S. F.
Guernsey & Wheeler....Rialto Bldg., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
General Engineering Company,
281 Natoma St., S. F.
Hoffman & Meusser,
1129-1131 Howard St., San Francisco.
J. C. Hurley..... 12 Geary Street, S. F.
S. T. Johnson Co....1334 Mission St., S. F.
Mangrum & Otter, Inc., 507 Mission St., S. F.
Ino. G. Sutton Co....243 Minna St., S. F.
Pacific Blower & Heating Co.,
Monadnock Bldg., S. F.
Pacific Fire Extinguisher Company,
507 Montgomery St., S. F.
Petersen-James Co.....710 Larkin St., S. F.

HOTELS
The Angelus, Loomis Bros.....Los Angeles

ILLUMINATION
Great Western Power Company,
233 Post St., S. F.

INGOT IRON
American Rolling Mill Co., Middleton, Ohio.
California Corrugated Culvert Co.,
8th and Parker Sts., West Berkeley.

INLAID FLOORS
Hardwood Interior Co., 554 Bryant St., S. F.

INTERIOR WOODWORK
New York Hardwood Floor Co.,
784 O'Farrell St., S. F.

INTERIOR WALL FINISH
Satina mfg'd. by C. H. Brown Paint Co.,
F. A. Frisius, 341 Lincoln ave., Alameda, California.

INSPECTIONS AND TESTS
R. E. Noble & Co., Humboldt Bank Bldg., S. F.
Robert W. Hunt & Co.,
418 Montgomery St., S. F.
Smith, Emery & Co. Inc.,
651 Howard St., S. F.

INSULATING MATERIALS
Armstrong Cork Co..... Pittsburg, Pa.

INTERIOR DECORATING
The Tozer Company, 228 Grant Ave., S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.
Kortick-Falls Mfg. Co.,
327-343 First St., S. F.

LIME
Holmes Lime Company,
Monadnock Bldg., S. F.
Shasta Lime Products Company,
1550 Bryant St., S. F.

LIGHTING FIXTURES
Adams, Hollopeter & Mallett,
353 Sutter St., San Francisco
Bauer Fixture Co.....49-55 Jones St., S. F.

LIGHT, HEAT AND POWER
Pacific Gas & Elec. Co.,445 Sutter St., S. F.
Great Western Power Co.,
233 Post Street, San Francisco

LUMBER
Sunset Lumber Co.....Oakland, Cal.
Santa Fe Lumber Co.,
Seventeenth and De Haro Sts., S. F.

MANTELS
Mangrum & Otter ....561 Mission St., S. F.
Thos. F. Rigney, ...9 City Hall Ave., S. F

MARBLE
Columbia Marble Co...268 Market St., S. F.

MARBLE CARVING
Florentine Art Studio... 932 Vallejo St., S. F

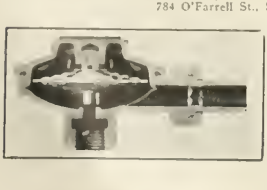
METAL AND STEEL LATH
Baker & Hamilton, 433 Brannan St., S. F.
Roebling Construction Co.,
San Francisco and Los Angeles
L. A. Norris & Co., Monadnock Bldg., S. F.

METAL CEILINGS
Berger Mnfg. Co.....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., S. F.

METAL SHINGLES
Metzger Bros., J. A. McDonald, Pacific Coast Agent ... Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co .....Treat Ave. and 19th St., S. F

MINERS
Enterprise Foundry Co. 200 2d St., S. F



The Dunham Radiator Trap
Makes Good on Every Essential Point. Send for Catalog
Western Division Office
C. A. DUNHAM CO. - 602-18 Monadnock Building
SAN FRANCISCO PHONE SUTTER 2548

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Globe Indemnity Company

Bonds and Casualty Insurance for Contractors

THE COMPANY WITH THE L. AND L. AND G. SERVICE

508 CALIFORNIA ST. Phone Sutter 198 SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
S. T. Johnson Co...1334 Mission St., S. F.
Fess System Co.....220 Natoma St., S. F.
T. P. Jarvis Crude Oil Burner Co.,
273 Connecticut St., S. F.
Blaisdell Machinery Co.,507 Mission St., S. F.
Simplex Crude Oil Burners. Furnaces and Ranges, manufactured by American Heat & Power Co., 607 First National Bank Bldg., San Francisco

OPERA CHAIRS
C. F. Weber & Co....365 Market St., S. F.

ORNAMENTAL IRON AND BRONZE
J. G. Braun.....Chicago and New York
Ralston Iron Works,
20th and Indiana Sts., S. F.
Standard Iron Works,
235-39 Shipley St., S. F.
Golden Gate Structural & Ornamental Iron Works.....1479 Mission St., S. F.
C. J. Hillard Company, Inc.,
19th and Minnesota Sts., S. F.
Sa'orinis Company, 15th and Utah Sts., S. F.
West Coast Wire & Iron Works,
861-863 Howard St., S. F.

OVENS—BREAD AND PASTRY
New Era Oven Co., 2560 Sutter St., S. F.

PAINT FOR STEEL STRUCTURES
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Buswell's Steel and Concrete Paints,
Oakland, Cal.
Carbonizing Coating, made by Goheen Mfg. Co., Canton, O. See advertisement for Coast distributors
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

PAINT FOR CEMENT
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.), (See adv. in this issue for Pacific Coast agents.]
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Dure-co Washable Water Paint & Waterproofing Liquid, sold by Carbolineum Wood Preserving Co., 311 California St., S. F.
Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Goheen Mfg. Co., ...Canton, O.
See advertisement for Coast distributors

PAINTS, OILS, ETC.
Rice Hueter Paint Company,
Mission, near Fourth St., S. F.
R. N. Nason Company.....San Francisco
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Goheen Mfg. Co., ...Canton, O.
See advertisement for Coast distributors
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co.,
S. F. and Los Angeles
Paraffine Paint Co....38-40 First St., S. F.
Standard Varnish Works, represented by W. P. Fuller & Co., S. F. and Los Angeles.

PAINT PRODUCTS
Felix Gross Co.....440 Ninth St., S. F.
Stockton Paint Company.....Stockton, Cal.

PAVING BRICK
Vallejo Brick & Tile Co.,
Alaska Commercial Bldg., S. F.

PHOTO ENGRAVING
California Photo Engraving Co.,
121 Second St., S. F.

PHOTOGRAPHY
Arthur J. Brunner Co....47 Kearny St., S. F.
Gabriel Moulin.....153 Kearny St., S. F.
Walter Scott.....538 Market St., S. F.

PIPE—CORRUGATED INGOT IRON
California Corrugated Culvert Company, Los Angeles and West Berkeley.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA.
N. Clark & Sons,
112 Natoma St., San Francisco
Gladding McBean & Co., Crocker Bldg., S. F.
Pacific Sewer Pipe Company,
I. W. Hellman Bldg., Los Angeles
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

PLASTER
Empire Plaster. The Nevada Gypsum Co.,
Pacific Bldg., S. F.
Mound House Plaster Co.,
259 Monadnock Bldg., S. F.

PLASTERING CONTRACTORS
Geo. MacGruer....319 Mississippi St., S. F.

PLUMBING
Jas. G. Sutton Co.....243 Minna St., S. F.
Peterson-James Co.....710 Larkin St., S. F.
Wetzel & Grass .....105 Fulton St., S. F.
Wittman, Lyman & Co., 340 Minna St., S. F.
Coleman, Alex., 706 Ellis St., S. F.

PLUMBING FIXTURES, MATERIALS, ETC.
Crane Co....Second and Brannan Sts., S. F.
Jno. Douglas Co....571 Mission St., S. F.
Haines, Jones & Cadbury Co.,
851-859 Folsom St., S. F.
P. F. Howard Co.,
Second and Folsom Sts., S. F.
Louis Lipp Company, Winton Place, Ohio.
Pacific Coast Office, 693 Mission St., S. F.
Mark-Lally Co., First and Folsom Sts., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent .....135 Kearny St., S. F.

PLUMBERS' SUNDRIES
Orca Sanitary Toilet Seat, manufactured by Orca Mfg. Co.,
700 Hooker & Lent Bldg., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

POWER PLANT EQUIPMENT
F. Harvey Searight...817 Shreve Bldg, S. F.

PULLEYS, SHAFTING, GEARS, ETC.
Meese and Gottfried Company.....San Francisco, Seattle, Portland and Los Angeles

RAILROADS
Southern Pacific Co.....Flood Bldg., S. F.
Western Pacific Railroad..Mills Bldg., S. F.

ROAD MACHINERY
Langford, Bacon & Myers,
Rialto Bldg., S. F.
Iroquois Iron Works (Barber Asphalt Company) .....Head Bldg., S. F.

ROAD CONTRACTORS
Engineering and Construction Co.,
Foxcroft Bldg., S. F.

REFRIGERATORS
McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton, Sts., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Lilley & Thurston Co., Rialto Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

W F AVERY, Prop. PHONE KEARNY 5319

STANDARD IRON WORKS

ORNAMENTAL IRON BRASS AND BRONZE

Store Fronts, Elevator Enclosures, Fire Escapes, Grille Work, etc.

OFFICE AND WORKS 235-237-239 SHIPLEY STREET SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX *Continued*

ROOFING AND ROOFING MATERIALS
- Bituline Co. of America, 24 California St., S. F.
- Dixis Oil Refining Co., 721 First Nat'l Bank Bldg., S. F.
- J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
- F W Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., Rialto Bldg., S. F.
- Matthew Peterson & Adams, 682 Monadnock Bldg., S. F.
- Pelts Grass Co., 440 9th St., S. F.
- Grant Gravel Co., Williams Bldg., S. F.
- L. B. Hooker Co...1530 Howard St., S. F.
- "Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Monadnock Bldg., S. F.
- Fibrestone & Roofing Co., Mutual Savings Bank Bldg., S. F.
- Genasco Ready Roofing, sold by Parrott & Co.....320 California St., S. F.
- Mackenzie Roof Co., 425 15th St., Oakland.
- Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
- United Materials Co.... Balboa Bldg., S. F.

ROOFING TIN
- American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- N. & G. Taylor Co.....Philadelphia, Pa.
- J. A. Drummond, 422 Chronicle Bldg., S. F.

RUBBER, TILING AND MATTING
- New York Belting & Packing Co., 129 First St., S. F.

SAND
- Del Monte White Sand, sold by Pacific Improvement Company, Crocker Bldg., S. F.
- Niles Sand, Gravel and Rock Co., Mutual Bank Building, S. F.

SASH CORD
- Puritan Sash Cord Company. (For Coast Agents, see advertisement.
- Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines 88 Broad St., Boston, Mass.
- Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCENIC PAINTING—DROP CURTAINS, ETC.
- The Edwin H. Flagg Scenic Company. 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
- C. F Weber & Co....365 Market St., S. F. 512 S. Broadway, Los Angeles.

SHEATHING AND SOUND DEADENING
- "Hydrex" Waterproof Building Papers, "Hydrex" "Saniflor" Deafening Felt, manufactured by Hydrex Felt & Eng. Co., N. Y. and sold by Rolph, Mills & Co., Hansford Bldg., S. F.
- Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, manufactured by F. W. Bird & Son, East Walpole Mass., Coast Agents, Lilley & Thurston Co.....Rialto Bldg., S. F.
- Samuel Cabot Mfg. Co., Boston Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK
- Berger Mfg. Co.....3120 Mission St., S. F
- Capitol Sheet Metal Works, 1927 Market St., S. F.
- Dunlevy & Gettle....79 City Hall Ave., S. F.
- Hibernia Sheet Metal Works, 219 Seventh St., S. F
- Olive & Cox.....85 Irwin St., S. F
- Western Furnace & Cornice Co., 1645 Howard St., S. F.

SHEET COPPER
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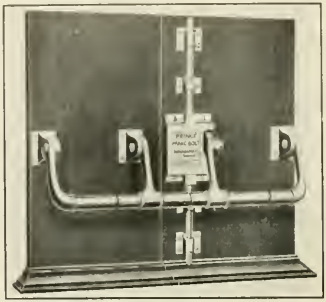

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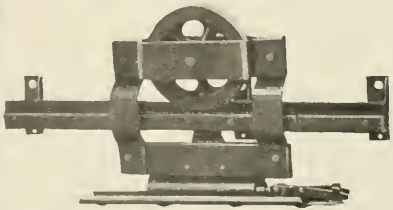

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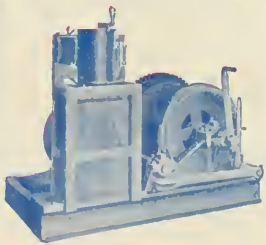

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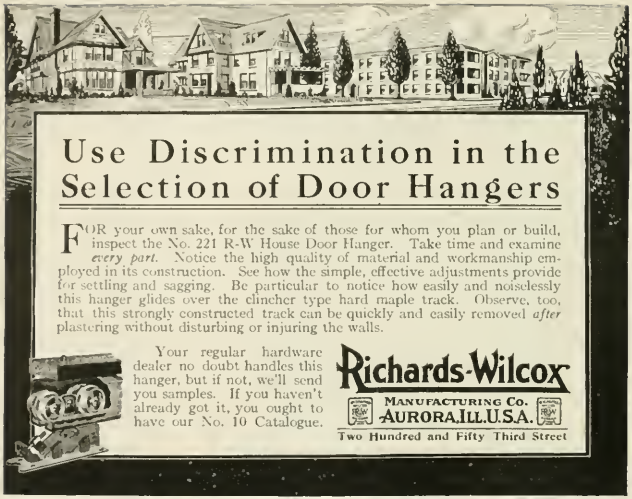

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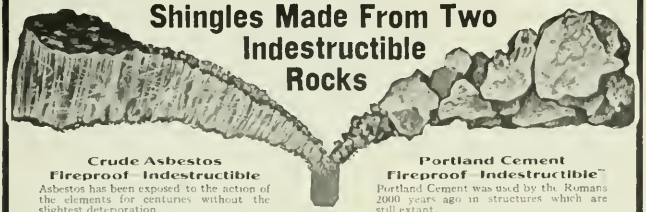

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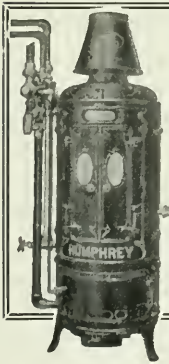

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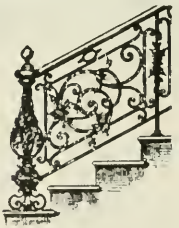

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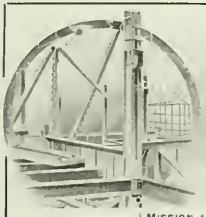

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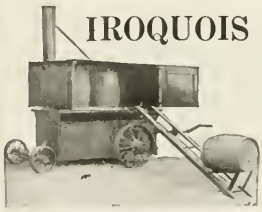

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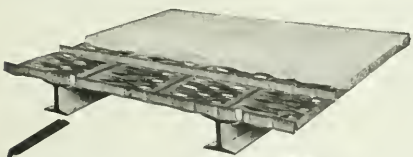

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Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.

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Humboldt Bank Building, San Francisco

Frontispiece
The Architectural Engineer
London
1913

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THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXXII. FEBRUARY, 1913. No. 1

75034

Art Glass Panel in Foyer of Knights of Columbus Building
Designed by H. R. Hopps

The Work of Smith O'Brien, Architect*

THE very varied examples of modern building shown in this number of The Architect and Engineer are, in an eminent degree, typical of what an up-to-date architect of large practice is called upon to do. The range of subject is remarkable to begin with. Steel skyscraper and frame flat; modern office building and country church, apartment houses and Turkish baths, halls and institutional buildings, banks and residences, all of these and others besides are here shown, each a distinct solution to problems of plan and design that differ from one another not only in themselves as buildings but in the spirit in which they must be conceived and realized. There is a point here which must not be overlooked. It is, of course, obvious enough that any architect's practice includes work widely different in character. To illustrate with the case that comes first to mind, namely the business block and the residence. The one is built to yield good returns on the money invested, the other to add to the beauty and comfort of home life. The first is an affair of cold blooded calculations, the second is a very human sympathetic undertaking, calling for something even more than art with a capital "A." While the commercial architect is sometimes commissioned to build homes, it is often discovered that they are failures. And your sympathetic architect is almost as often a failure in planning for investment. When, however, an architect is endowed with what psychologists would call a compound personality, we have the larger and rarer type capable of separately dealing (as if from iron clad compartments of the brain) with the artistic, the scientific, the commercial and the sympathetic sides of the craft, and, let it be said, dealing with these four sides with equal strength and thoroughness. This is the type from which the great architects are drawn, whether the annual output from their office is rated at one hundred thousand or one hundred millions of dollars expended. The

*Plates marked with an asterisk are buildings designed by the former firm of Meyer & O'Brien. The partnership was dissolved in January, 1908.

Detail of Upper Stories and Dome of Humboldt Bank Building, San Francisco

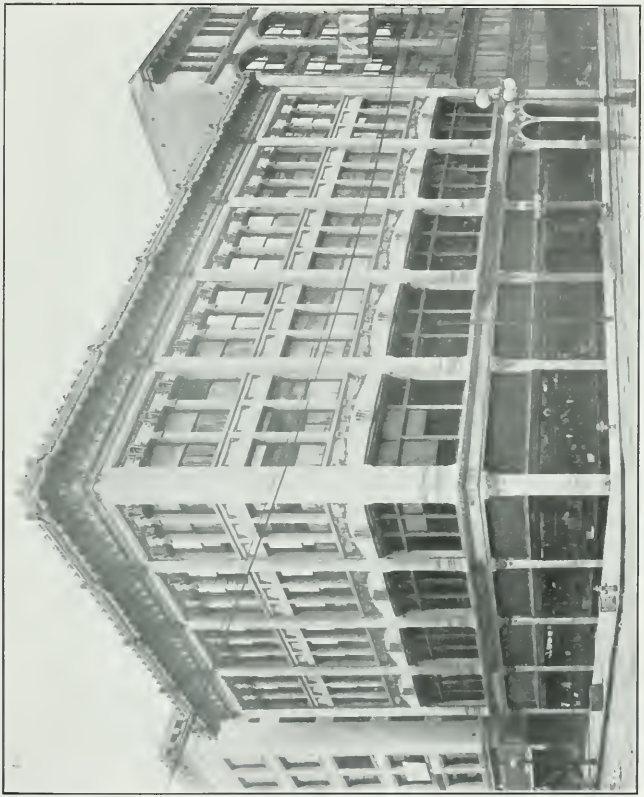
Columbus Savings Bank, San Francisco

Bank of Bakersfield, Bakersfield, California

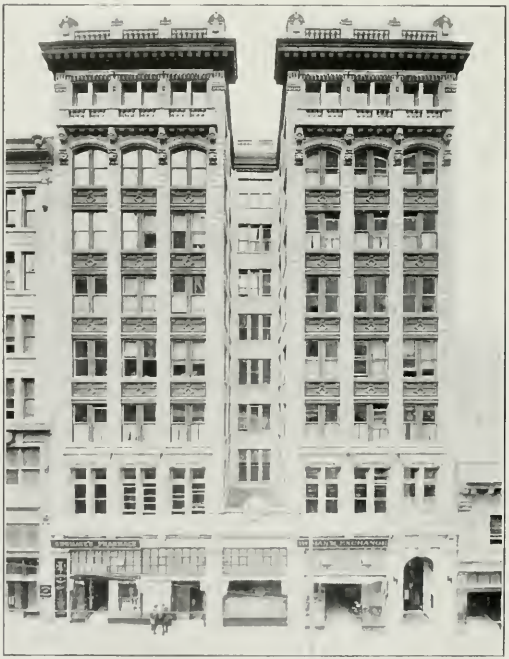
Rialto Building, San Francisco

type of architectural mind capable of only one of these cardinal view-points is never really great. We are all familiar with the faddy impracticable "artist" architect. He will almost faint at the sight of a red pressed brick. Then again, the man who doesn't know one order from another (and doesn't care), but who is death on construction, this kind, although he once loomed big in the eyes of some—has now found his true level. And bigness—a quality often due to an optical illusion of nearness, is also identified with the commercial architect who does an enormous business through an enormous organization. His output is immense but his work is not necessarily great.

The plates shown in this number of The Architect and Engineer, illustrating the Humboldt Bank Building, offer a fine and a unique example of architectural conscience and right feeling. This building plays an important part in the "picture" of San Francisco. From Lotta's fountain the impression is of a tall square stone tower finished on all sides and topped with a crown-like dome. The peculiar and praiseworthy merit of this illusion is that the building lot is a narrow deep one set in the midst of a long block with only a fifty foot frontage on Market street. The entire building is carried up to practically the height of the tower, but the return wall on each side above the low adjacent buildings to a distance equal to the front, are both treated with dark stone and terra cotta facing, jointing and rusticated quoining. On the East side this long vertical face reaches back to a light well and so forms a real



Hastings Building, San Francisco.



Foxcroft Building, San Francisco

Warwick Building, San Francisco*

Hooker & Lent Building, San Francisco.

corner to this "tower." But on the West wall which runs practically in one plane clear through, the side of the tower is a little over an inch in front of the rest of the wall which is of plain concrete whitewashed.

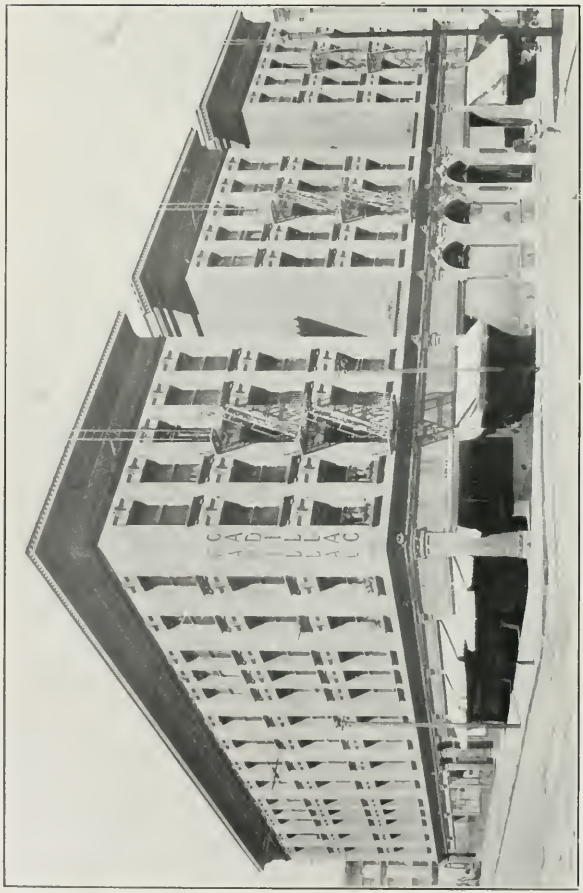
The whole scheme is a veritable "*tour de force*" and of course it involved negotiations with adjacent owners. But it was all well worth the trouble. It shows that somewhere back of the architectural studies that projected this clever piece of design was a force, a conscience, making for, and insisting on what was architecturally right and proper and monumental in a conspicuously placed building.

The "Monadnock Building" in the same vicinity is a typical business block excellently conceived, economically constructed and appropriately finished. There is no more popular office building in San Francisco.

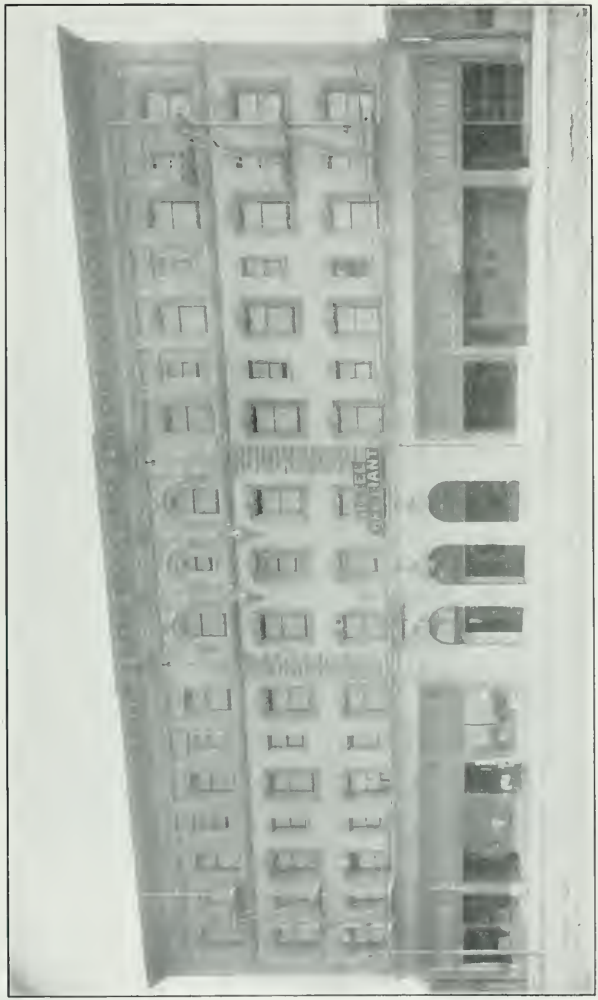
Galen Building, San Francisco

The Foxcroft Business block facing south is planned with an open court in the front façade, a device likely to become more and more favored where the lot is of sufficient width. Sunlight in San Francisco being as much a need in the office as in the home.

The *Hastings Building* is an interesting adventure in design. While holding to the lines of a steel frame the minor detail is quite different from anything done in this country. It is wholly a modern importation from the continent of Europe—an interesting and stimulating relief from the everlasting "orders" with endless modillions and medallions and miles of eggs and darts of which we are all getting rather tired.



Cadillac Hotel, San Francisco.



Hotel Brilliant, San Francisco.

Knights of Columbus Building, San Francisco
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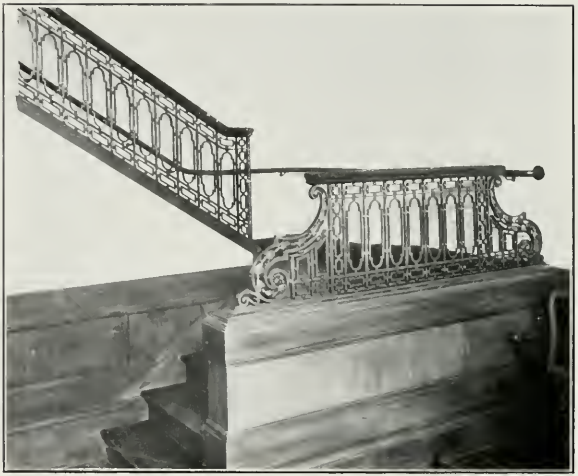
Foyer, Knights of Columbus Building, San Francisco
Smith O'Brien, Architect

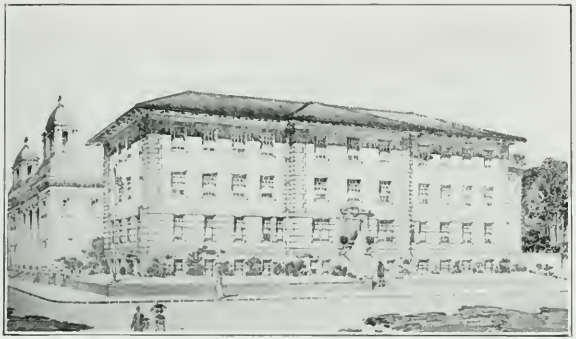
Club Rooms, Knights of Columbus Building

Lodge Room, Knights of Columbus Building



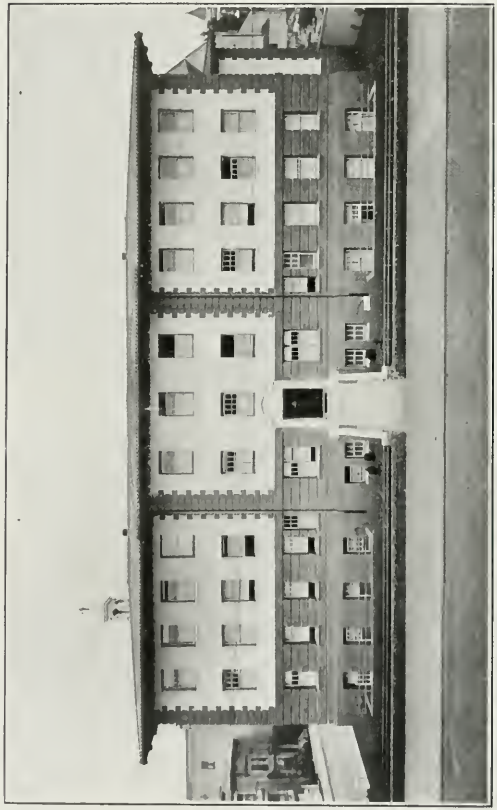
Ornamental Iron Staircase, Knights of Columbus Building
Executed by California Artistic Metal & Wire Company

Women's Directory Building, San Francisco — *Smith O'Brien, Architect*
Sheet Metal Work, including dome, by Western Furnace & Cornice Company

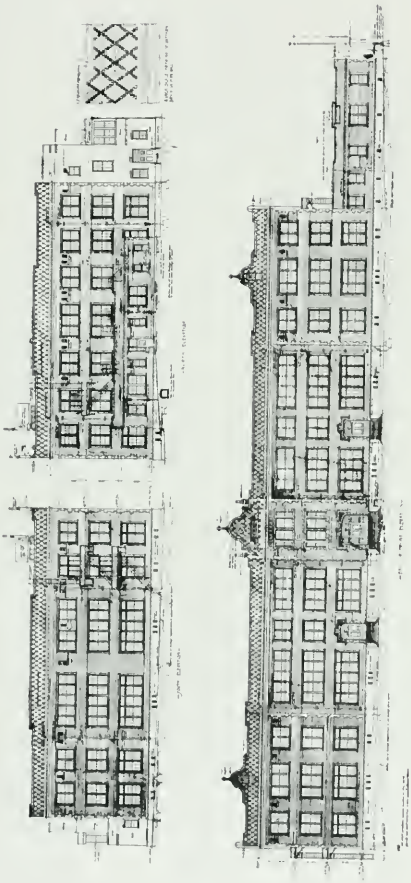


Architect's Perspective of St. Dominic's Priory

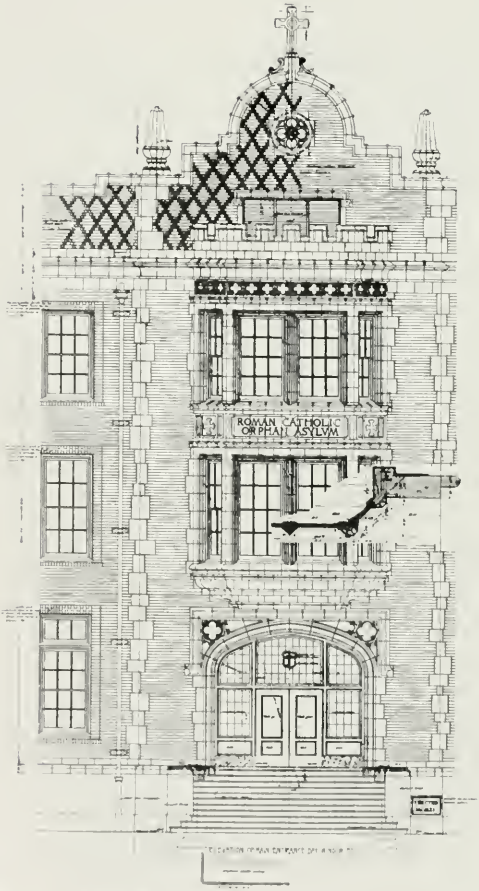
Detail of Entrance St. Dominic's Priory, San Francisco
Smith O'Brien, Architect



St. Dominic's Priory from a Photograph of the Completed Building
Smith O'Brien, Architect



Elevations, Roman Catholic Orphan Asylum, San Francisco
Smith O'Brien, Architect

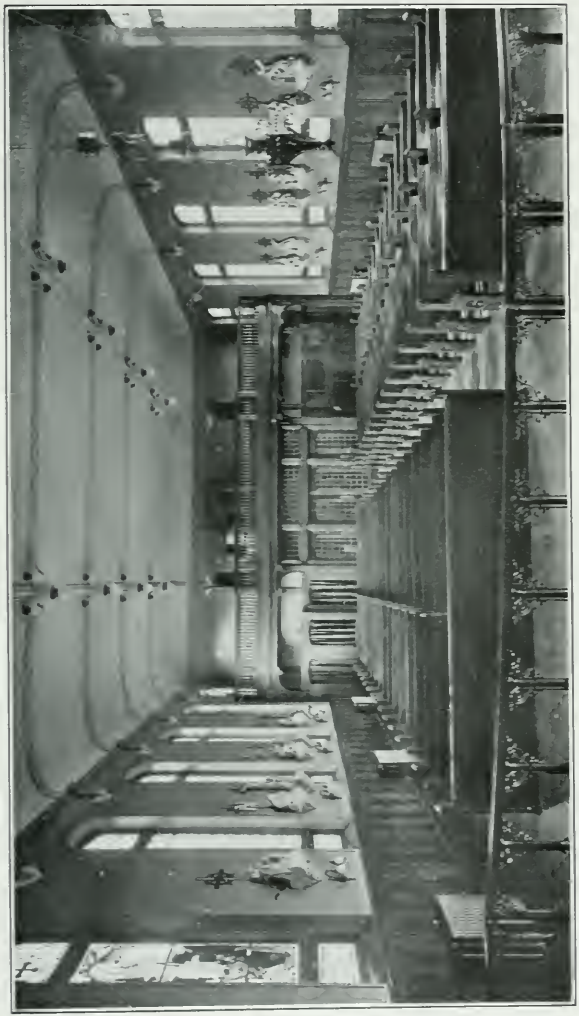


Elevation of Main Entrance, Roman Catholic Orphan Asylum

Roman Catholic Orphan Asylum, San Francisco
[illegible] Architect Wiring by National Electric Company

View from North of Orphan Asylum

Architect's Perspective of Orphan Asylum



Chapel, "Our Lady's Home," Ivanhoe, Cal.
Smith O'Brien, Architect

Chapel, Our Lady's Home, Fruitvale, California
Smith O'Brien, Architect

[illegible]

Rucker-Fuller Building, San Francisco
Smith O'Brien, Architect

The *Roman Catholic Orphan Asylum* presents a sane solution to a problem of planning where economy must be considered of prime importance. The lot of the orphan is a hard one at best. It is difficult to combine simplicity and system for many hundreds of inmates, with much of the grace of home and the cheerful surroundings so essential to the happiness and well-being of little children. Most asylums and schools, too, for that matter, are pathetically cold and bare. The type of collegiate gothic here used has the merit of color and texture in warm toned and honest brick impossible to achieve in the half-baked "classic" work, prim, false and cold, so usual in this kind of building. It is to be hoped that the grounds will be liberally planted with trees and that the corners of the pavilions will be generously grown over with ivy and Virginia creepers.

Hammam Baths Building, San Francisco
Smith O'Brien, Architect

Competitive Plan for Bohemian Club Building, San Francisco. Smith O'Brien, Architect

Rose Apartments, San Francisco *Smith O'Brien, Architect*

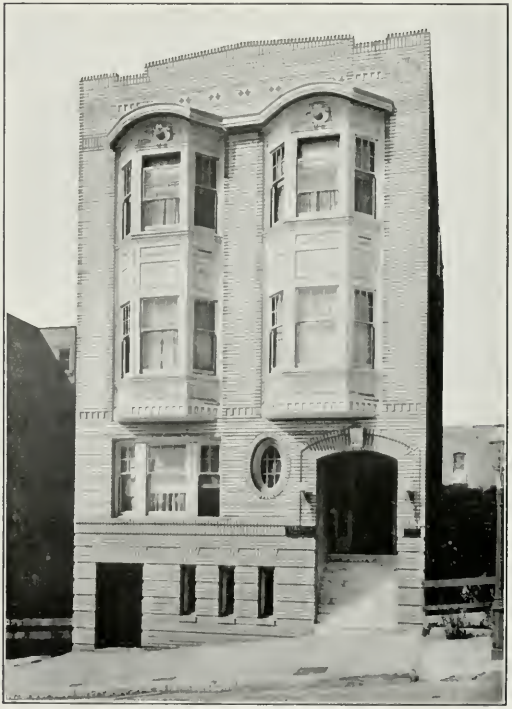
Building for Fitel Phillips Co., San Francisco
Smith O'Brien, Architect

St. John's Church Healdsburg
Smith O'Brien, Architect

Converse Flats, San Francisco.
Smith O'Brien, Architects.

Apartments, Pierce Street, San Francisco
Smith O'Brien, Architect

Residence Fifth Avenue, San Francisco
Smith O'Brien, Architect



St. Anselm Apartments, San Francisco
Smith O'Brien, Architect

Apartment House, California and Leavenworth Streets, San Francisco
Smith O'Brien, Architect

Residence on Jackson Street, between Locust and Spruce Streets
Smith O'Brien, Architect

St. Dominics' Priory building exhibits color, charm and frankness in pleasing contrast to the forbidding austerity, false work and downright ugliness characteristic of so many modern buildings of this type.

The Knights of Columbus Hall, recently completed, besides being a well planned and convenient home for the institution that it houses, has, in its design, a suggestion of more than passing interest. Whether consciously or not, its designer has caught the new spirit informing the architecture of the age. The decided Italian feeling exhibited in this front, which is also a very creditable composition, cannot escape notice. Those who are sensitive to the trend of architecture in the present decade must realize that in design, the cold logic of French influences is giving way to the warmth and feeling of Italy. The transition has a sort of philosophic interest to those who see beneath the surface. The French mode is one of form in the abstract. We think of French work as a drawing, a rendering in black and white. Texture, material, color and sentiment are not suggested. All is reason, intellect and order projected into form. Italian architecture does not call up the suggestions of *drawing*, but of *building*. Not merely light and shade but tones and stones and broken light and variegated surfaces. Not fashion plate perfection but human palpitating reality. If this is really the trend of the age we should be grateful. It is surely a development and an advance. The work herein depicted is a part, and a quite praiseworthy part, of the general movement.

* * *

Galvanized Iron as a Preservative

Galvanized iron covering of timber trestle stringers was effective protection against the weather during seventeen years after which the perfectly sound timbers were removed. The metal was No. 26 gauge and had been used on a trestle frame as protection against fire.

Adding Five Stories to an Office Building

By ALEXANDER BROCINER, Consulting Engineer.

The process of modernizing and adding to a commercial or office building is always an interesting one, though not universally favored by our Coast architects. As a rule they would prefer to build entirely new but occasionally conditions do not warrant the complete razing of an old structure for reasons probably best known to the owner. In San Francisco there have been no notable instances of adding more stories to high buildings since the fire. At that time the Chronicle Building, which was considerably damaged, was rehabilitated and its height was increased from nine to eleven stories and it has proved one of the best paying office building investments in San Francisco. In Oakland the Central Bank Building, a much older structure than the Mills, was modernized both outside and in and two more stories were added. Los Angeles has had quite a number of its older buildings rebuilt and enlarged and some of them are difficult to distinguish from the entirely new structures.. The following article from the Real Estate Magazine of New York demonstrates the practicability of this class of construction under unusual conditions:—Editor.

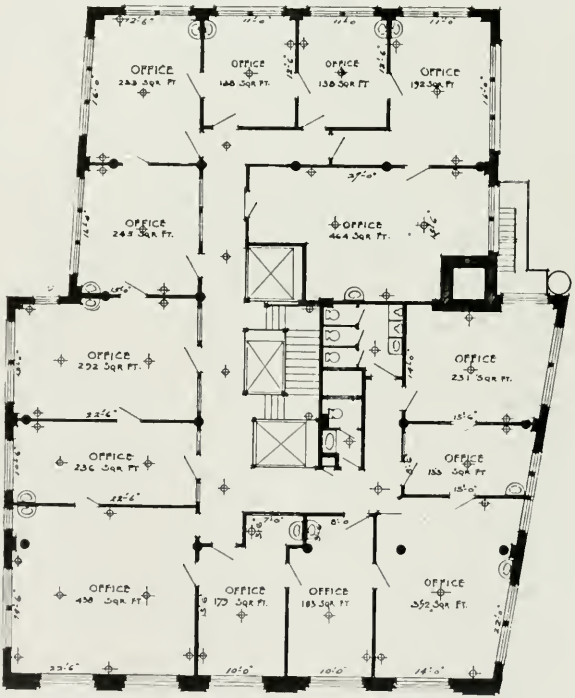
THE astonishing growth in the population and commerce of the city of New York has brought about a great natural enhancement in the value of its land, particularly in those localities where special conditions favor an accumulation of business activity. When we consider the tremendous sums of money paid for relatively small plots in lower Manhattan, we find that it is an imperative necessity that suitable buildings shall occupy them so that the entire investment shall be a profitable one.

Very often we see buildings, some of them in very good state of conservation and with a pleasing architectural design being torn down to be replaced by taller structures, with the sole object of better utilizing the earning power of the land they are on.

One of the most peculiar characteristics of the development of New York city is the periodical shifting of established trade centers and the creation of new ones. In the lower part of the city we can read its commercial history from the various structural features of its buildings and quite often in the records of the Buildings Department we find that alterations were made to buildings at various times to accommodate them to the different uses to which they had to be put in conformity with the trend of trade and to meet the prevailing demand. A large number of buildings, now used for office purpose were given over to the manufacturing or storage of various goods and materials and therefore they have the extra-strong floors, thick walls and wide foundations originally required for a safe distribution of the loads of heavy machinery or stored materials.

These buildings also have an excess of strength in dollars and cents which does not produce any income, while the land is taxed to the limit. The great possibilities of the so-called "latent earning power" of some of these buildings have been clearly demonstrated in various instances, one of which has been made public recently by a real estate deal consummated in the fire insurance district. The newspapers report that the fourteen story office building owned by the North River Insurance Company at Nos. 93-95-97 William Street has been sold and that the sellers took back a long lease on the entire building at a figure in excess of $1,500,000.

The history of this building is very interesting for the real estate investor as well as for the builder. Erected about 20 years ago, the original building was nine stories in height, with a frontage of about 36 feet on William Street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OFFICE 188 SQR FT.
OFFICE 138 SQR FT
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OFFICE 231 SQR FT.
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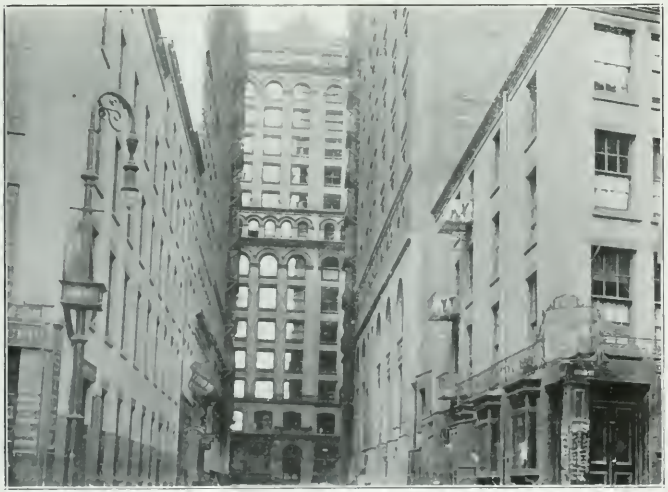
OFFICE 133 SQR FT
OFFICE 438 SQR FT
OFFICE 173 SQR FT.
OFFICE 183 SQR FT
OFFICE 352 SQR FT.

FRANK H QUIMBY
ARCHITECT
99 NASSAU ST

PLAN OF THE 12TH 13TH & 14TH FLOORS
NORTH RIVER INSURANCE CO'S
BUILDING
93-95-97 WILLIAM ST NY

AL. BROCINER
CONS ENGINEER
4 EAST 42ND ST

North River Insurance Company's Building Before Addition Was Built



North River Insurance Company's Building After Completion of Extensive Addition

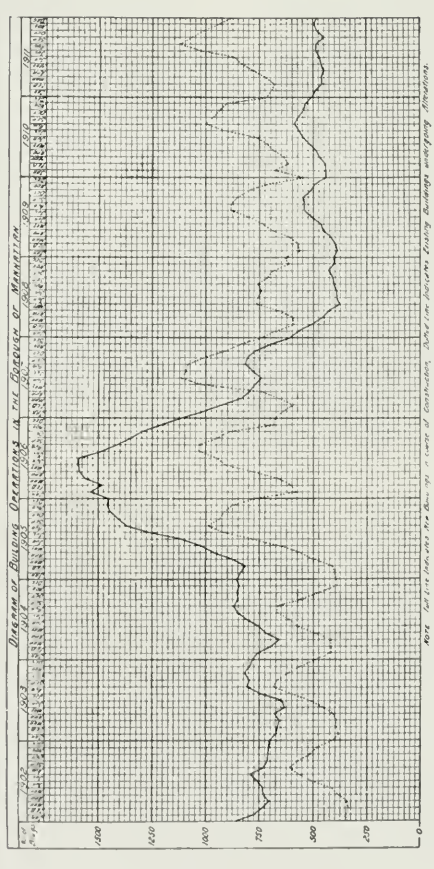


PLATE II
Diagram of Building Operations in the Borough of Manhattan
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and about 80 feet in depth; during its construction 24 feet 9 inches have been added to its front, making a total of 60 feet 9 inches. The structure was intended to be used by a printing firm, and therefore floor beams were provided strong enough to carry the heavy loads of printing presses and to withstand their vibration.

When that section of William Street changed from one of warehouses and factories to one of offices, and this building passed to the hands of the present sellers, alterations were made to render the building suitable for the new class of occupation. That is, the floors were divided into offices by means of fireproof partitions and electric lights, steam heat, passenger elevators and the required plumbing were installed. In later years a number of old buildings in the neighborhood were demolished, modern high office buildings were erected and that part of William Street assumed an entirely new aspect with the concentration there of the fire insurance business. On account of the increase of land value and the great demand for offices in that section of the city, the North River Insurance Company decided about three years ago to make another alteration to its building, having in view a possibility of adding a few stories to its height.

The problem of increasing the height of this building was complex and was made more difficult by the agreement that the eight lower floors should remain undisturbed for their tenants and that the electric light, heating and elevator service should not be interrupted. That these conditions have been satisfactorily complied with and that all the difficulties inherent in such a complicated alteration have been successfully overcome can be seen from the fact that five stories have been added to the height, great improvements have been made throughout the building and the entire work has been carried out at a reasonable cost and at a very small loss of rental for the old part of the building during the alteration.

A few words as to the structural features of this alteration may prove interesting to those contemplating similar improvements.

The original building had thick brick walls and piers varying from 2 feet 4 inches, 3 and 4 feet at the first story to 1 foot 8 inches, 2 feet and 2 feet 8 inches at the ninth story. The front of the building was formed of a series of brick piers, part self supporting and part carrying floor beams and girders. The side walls were self supporting, while the rear walls carried the floor beams. The floor beams of the old building are of wrought iron and strong enough in some floors to carry very heavy loads.

The columns of the old building were of cast iron 6 and 7 inches in diameter in the ninth and eighth stories, increasing in the lower floors to 12, 14 and 15 inches in diameter. The foundations consist of wide concrete footings with steppings of brickwork, capped with huge granite blocks.

After a careful study of the existing conditions as well as of the permissible loads on the old foundations, brick walls and piers and on the lower columns, it was found possible to prepare an economical design for the addition of five stories, making thereby the improved building fourteen stories in height. In order that the brick piers of the lower stories should not be stressed beyond the safe limit it was found necessary to reduce to the lowest minimum possible the additional load due to the enclosure of the upper new five stories. This was accomplished by using a steel skeleton frame carrying 12-inch thick brickwork, pierced by very large window openings, stressing thereby very little the old brickwork underneath and securing at the same time splendid light for the new offices.

The columns of this frame were anchored in a continuous grillage of steel beams which were imbedded and securely anchored in the brick walls all around the building at the ninth floor level, thus practically forming a new foundation

for the upper five stories. The light cast iron columns of the seventh and eighth stories were reinforced by means of steel boxing, increasing their carrying capacity sufficiently to allow them safely to support the steel columns of the upper new structure. This work was done mostly at night so that the tenants of the respective floors should not be disturbed. Particular attention was paid to the framing of beams and girders of the columns in the new stories by providing very stiff connections and making the whole frame well braced and properly anchored in the lower building.

A new elevator shaft having been provided and a new traction elevator installed, the two existing elevators were taken out and new traction elevators put in their place so that the 14-story building has three new elevators, amply sufficient to take care of the traffic in rush hours.

The entire building operation was conducted from the outside, a large lift placed in a wooden tower being used. The erection of the additional five stories and all the structural changes required in the lower floors as well as slight alterations in the existing plumbing, heating, and lighting arrangements, as well as the painting of the entire building, were completed in about seven months.

This building, now fourteen stories high, is entirely up to date from the basement to the top story, offering all modern facilities and presenting to its tenants all the safeguards against fire required by the city authorities. *The cost of the complete improvement, together with all carrying charges and loss of rental on the ninth floor during the alteration, did not exceed* $195,000. *An additional rental area or* 20,000 *square feet was obtained and the rental of the building was increased* $35,000 *while the cost of maintenance was increased only ten per cent.*

Deducting the cost of maintenance of the upper five stories from the rental received for them, we find that this building operation as an investment has returned about seventeen per cent. for the money spent on it and is one of the best paying office buildings in the fire insurance district.

This is a good proof of the earning possibilities of some buildings when they are wisely utilized.

Frank H. Quinby was the architect of this improvement. The writer designed all the structural work. The entire work was done under the supervision of Charles B. Van Valen, who is the agent of the building.

* * *

Skyscrapers for Courthouses

The plan to solve the courthouse needs in Kings County, New York, by the erection of a skyscraper building on the site of the present courthouse and municipal building, has been discussed by judges and lawyers with considerable earnestness. A number of interviews with members of the legal profession have been printed and it is interesting to note the diversity of opinion as to the desirability of placing courthouses in the upper stories of high buildings. On the one hand, we have the opinion, that to place courthouses high in the air would serve to remove them from the noises of street traffic that at present are so often a disturbing feature of courtroom procedure. On the other, there is much frank hostility to any such arrangement, as to quote one of the judges interviewed:

"It would be impossible to provide elevator service to carry from the various courtrooms large numbers of people who would all at a certain time be leaving the building during the court recesses."

The plans submitted call for a building of 24 stories. It is yet to be seen to what extent the opinion of the judges and members of the bar will influence their modification.

The Effect of Electricity on Concrete

That there is such a thing as Electrolysis in concrete has been demonstrated very positively by investigations of the Key Route piers in San Francisco Bay by Engineer Holmes. It has been found necessary to replace many of the concrete piles supporting the Key Route's Elevated railroad, stray currents from the power lines having effected a very perceptible disintegration and softening of the concrete. An abstract of Mr. Holmes' report will be published in this magazine in a future number. The following article from Cement Era is in line with local observations:

DURING the last few years attention has been called to the possibility of damage to reinforced concrete structures by stray currents from electric railways and other power sources. The laboratory experiments of Toch, Knudson and Langsdorf in 1906 and 1907 showed quite clearly that under certain circumstances the passage of electric currents from the reinforcing material out into the concrete gave rise not only to serious corrosion of the reinforcing material but also to cracking and disintegration of the surrounding concrete. Since then, numerous laboratory experiments have been carried out by various investigators, all tending to confirm the earlier observations in regard to the destruction of the concrete, but giving rise to numerous conflicting theories as to the cause of the phenomena observed.

Following the early demonstrations of the possibility of damage to concrete by electric currents, reports of serious damage to certain concrete buildings, bridges, etc., became current, and considerable apprehension has been aroused in some quarters that great damage may be in progress due to this cause. The subject was brought directly before the Bureau of Standards by numerous letters of inquiry from engineers, contractors, and corporations, requesting information in regard to the probable extent of the damage and the most feasible methods of preventing it. Although a good deal of work had been done, showing that under certain conditions, readily producible in the laboratory, blocks of reinforced concrete could be completely destroyed by electric currents, there remained a wide diversity of opinion as to the cause of the phenomena observed and no work at all had been published tending to show to what extent and under what circumstances damage might be expected under practical conditions, or how trouble from this source might best be prevented.

Recognizing the great practical importance of the subject and acting in response to requests from numerous sources, the Bureau of Standards has undertaken a thorough investigation into the cause and nature of the phenomena observed in concrete under the influence of electric currents, the extent to which damage has occurred or is likely to occur in practice from this cause, and the best methods of mitigating the trouble under practical conditions. The work was begun during the summer of 1910 and certain phases of the investigation are still in progress, but enough work has been completed to justify the publication of a report of progress at this time.

The results of these investigations were presented before the Pittsburgh convention of the National Association of Cement Users by Mr. Burton McCollum in a lengthy and exhaustive paper prepared by himself, together with Messrs. E. B. Rosa and O. S. Peters. The paper goes into all the details of the methods of making the various tests and the results obtained, and is much too lengthy to be reproduced in full. The conclusions which are arrived at as a result of these tests are of much interest and value and some of them are given herewith.

(1) The observations of previous investigators that the passage of current from an iron anode into normal concrete caused the destruction of the test

specimen by cracking the concrete, were only partly confirmed. This effect was found not to occur in most of the specimens tested when the potential gradient was less than about 15 volts over a distance of 3 inches, or about 60 volts per foot.

(2) Of the numerous theories that have been advanced for the cracking, that one which attributes it to oxidation of the iron anode following electrolytic corrosion has been fully established. The oxides formed occupy 2.2 times as great a volume as the original iron, and the pressure resulting from this increase of volume causes the block to crack open.

(3) Metals which do not form insoluble end products of corrosion, and all non-corrodable anodes, never cause cracking of the concrete as a result of the passage of an electric current.

(4) The only effect which an electric current has on reinforced concrete is to cause a migration of the water soluble elements. Consequently, in the absence of electrodes, the ultimate effect of current flow on the physical properties of the concrete is not materially different from that of slow water seepage, which also removes the water soluble elements. Non-reinforced concrete buildings are therefore immune from trouble due to stray earth currents. They might, however, be injured by the grounding of power wires, carried in conduits embedded in the concrete, since these conduits would then act as electrodes.

(5) Conditions do occur in practice which will give rise to damage due to stray currents, but the danger from this source has been greatly overestimated in many quarters. While precautions are necessary under certain conditions, there is no cause for widespread alarm.

(6) Waterproofing reinforced concrete would greatly increase its resistance and diminish accordingly the danger from either the anode or cathode effects.

(7) Waterproofing to prevent electrolysis is, however, a much more difficult matter than waterproofing to maintain a moderate degree of dryness, because of the much higher degree of waterproofing required in the former case.

(8) It has been found that practically all of the waterproofing agents now on the market that are intended to be mixed with the concrete, are of little value as preventives of electrolysis. Waterproofing membranes, etc., applied to the surface can be made much more effective and when properly applied may have considerable effect in preventing the entry of earth currents into the concrete.

(9) Painting or otherwise coating iron with an alkali-resisting metal preservative before embedding it in concrete may serve to minimize the dangers of electrolysis, but no such coating has been found that does not prevent the formation of the bond between the concrete and iron when the concrete sets.

(10) In order to insure safety from electrolysis, potential gradients must be kept much lower in structures exposed to the action of salt waters, pickling baths, and all solutions of chlorides, sulphates, nitrates, or carbonates.

(11) All electric power circuits within the building should be kept free from grounds directly on a portion of the building itself. If the power supply comes from a central station the local circuits should be periodically disconnected and tested for grounds and incipient defects in the insulation. In the case of isolated plants ground detectors should be installed and the system kept free from grounds at all times.

(12) All pipe lines entering concrete buildings should, if possible, be provided with insulating joints outside the building. If a pipe line passes through a building and continues beyond, one or more insulating joints should be placed on both sides of the building. If the potential drop around the insulated section is large, say 8 or 10 volts or more, the insulated portion should be shunted by means of a copper cable.

(13) Lead covered cables entering such buildings should be insulated from the concrete. Wooden or other non-metallic supports which prevent actual contact between the cable and the concrete will give sufficient insulation for this purpose. Such insulation of the lead covered cable is desirable for the protection of the cable as well as the building.

(14) The grounding of electric conduits to water pipes and ground plates is in general not to be recommended in the case of concrete structures.

(15) In making a diagnosis of the cause of damage in any particular case, the fact that a fairly large voltage reading may be obtained somewhere about the structure, should not be taken as sufficient evidence that the trouble is due to electrolysis. The distance between the points, and particularly the character of the intervening medium, are of much greater importance than the mere magnitude of the voltage reading. As a precautionary measure, however, all potential readings about a reinforced concrete structure should be kept as low as possible.

* * *

British Columbia Competition a Disappointment

THE plans submitted by the architectural firm of Sharpe & Thompson, old Safe Realty Building, Vancouver, were adjudged first honors in the recently decided competition for plans of the new University of British Columbia, to be erected at Point Grey, near Vancouver. Second place fell to the lot of Douglas Scott Bow, also of Vancouver, while third and fourth prizes were awarded the firms of Messrs. Philip Turner and Partners, Montreal, and Symons & Rae, Toronto, respectively. The cash prizes to be received by these four leaders are respectively: $4,000, $3,000, $2,000 and $1,000. The first honors winners will enjoy the emoluments further provided in the detail and specification plans, that will be required in the actual work of construction.

Vancouver city led in the number of candidates for the honor of designing the provincial university, five designs being submitted from that city, with three from Victoria; three from Montreal; two each from Toronto and Edmonton; North Vancouver, Kamloops and Regina also being represented. The committee of award was composed of the minister of education, Hon. Dr. H. E. Young, F. L. Carter-Cotton, chancellor of the new university, and Messrs. W. Douglas Caroe, of London, England; A. Arthur Cox and Samuel McLure, of Vancouver, members of the architectural profession, co-operating with, and assisted by the provincial minister of public work, Hon. Thomas Taylor.

That the competition proved disappointing is only too apparent, judging by the following commentary which occurs in the memorandum submitted by the committee of award to the provincial government:

"The prizes offered are almost on a scale of lavishness, and the competition should have attracted all the best talent in the country. It was, therefore, a matter of some disappointment and surprise that only nineteen sets of drawings were submitted, and of these, one could not be considered a serious effort. Five others were merely tentative, and of these, one was set out of order as being signed by the competitor's name. We were, therefore, reduced to the consideration of thirteen schemes, and of these, we had to reject one as having marks of identification upon it, which are disallowed by instructions. It was therefore disqualified, even if otherwise satisfactory, which was far from being the case. Twelve sets were left from which to make our selections. In other words, one-third of the whole number submitted could claim prizes. We are unable to point very clearly to the reasons why the response has not fulfilled our expectations. It may possibly rest with the fact that designs of this kind are of a very technical nature, and in the instructions great latitude was left to the individual architect."

San Francisco's Labor Problem

By WM. E. HAGUE, Sec'y. General Contractors Association, San Francisco

LABOR unions exist in nearly all cities of any size in the United States to a more or less effective degree. Their work in the past has done much to increase the wages of mechanics and laborers and to elevate the standard of efficiency. That they can continue to do much to maintain the standard of efficiency and to retain the favorable working conditions gained by their organized effort can not be doubted, and work along those lines will probably benefit themselves and the community at large. If, however, they are to continue as the tool and implement for obtaining further increases in wages and more arbitrary rules, their usefulness may reasonably be questioned, both as to the ultimate benefit to the men themselves and the community at large. This for obvious economic reasons which must be evident to every thinking man.

Union labor is often unjustly criticized by men who have been unfairly dealt with, and some who have not, and it is not the intent of this article to make such criticism, but rather to place before the readers of this magazine a few facts of the labor problem facing San Francisco. Undoubtedly many of the leaders of the labor unions and the San Francisco Building Trades Council and Labor Council are sincerely and legitimately working for the organizations which employ them. P. H. McCarthy, as President of the State Building Trades Council and the San Francisco Building Trades Council, has frequently shown a fairness and justice, when dealing with employers, with which he has seldom been credited. He has proven himself a most successful labor leader, and has succeeded in building up the greatest labor machine in the country. However, McCarthy himself, is frequently the victim of his own machine. His experience while acting as mayor of San Francisco gave him a broad knowledge of affairs, which few labor leaders have had the opportunity of acquiring, and the organizations of which he is president frequently adopt rules and make demands which his broader experience must tell him will not work to the best interests of the cause which he represents and the machine which he has built up.

Of all the combinations of capital in this country there is no greater "trust" than that of the unions and Building Trades Council of San Francisco. The ramifications of their power extend to the inner walls of the Capitol in Sacramento, and the tentacles of the octopus are forever reaching out in the different trades for higher wages, shorter hours or the imposition of an arbitrary working rule.

An instance of the working of the "machine" and the snap judgment only too frequently taken by the Building Trades Council recently occurred in the case of a demand made by the Roofers' Union and approved by the Council. This case is illustrative of San Francisco's labor problem, and we will go into it in some detail.

In the building business of San Francisco there is a small line of work followed by a few specialty contractors (to be exact, there are five of them), who confine themselves to contracting for dampproofing and whitewashing, and are specialists in that line only. The work involved requires no great amount of skill, and these contractors, for the last ten years, have been in the habit of employing an intelligent class of laborer, whom they have made proficient in their line of work, and in a number of cases the employment has been steady throughout the year with one firm. They have been paying wages to these men of from three dollars to four dollars a day. The union wage of the common laborer is two dollars and a half a day, and by recruiting their men from

the ranks of the laborers, an opportunity for advancement lay open to the latter. The tools and implements used in applying the dampproofing were not claimed by any other trade, and therefore the laborer was free to follow this line of work without encroaching on the jurisdictional claims of an organized union.

At the request of certain labor leaders they formed an individual union and made application to join the Building Trades Council. The Council refused the application, however, and shortly thereafter the Roofers' Union demanded that the dampproofing and whitewashing contractors employ its members and pay them their scale of $6.00 for journeymen and $7.50 a day for foremen. The Building Trades Council endorsed the demand of the Roofers' Union, and the dampproofing contractors were notified of the action taken.

The dampproofing contractors found that to grant the demand of the Council would practically put them out of business, as the increased cost of wages would increase the cost of their work to such an extent that the buildings would go without being dampproofed, or lath and plaster would be used. As they were all associate members of the General Contractors Association they appealed to that body for support in their difficulty. The association voted to support them, and the matter is now being arbitrated. Some equitable adjustment of the difficulty will no doubt be reached shortly, owing to the support the dampproofing contractors have been able to bring to their cause, and to the fact that the Building Trades Council is now showing a desire to treat fairly in the matter.

This brings us to another phase of San Francisco's labor problem. For twenty years past the mechanics and laborers in this city have been organized, and have steadily gained in strength through unity of action, brought about by the Building Trades' and Labor Councils. From time to time demands have been made upon the contractors and employers in general, and owing to the lack of organized and effective opposition these demands have been granted, until today in the building business, particularly, we find the employer hampered on all sides by arbitrary working rules of the men. In many cases the wages being paid are too high when compared with the scale in effect in other equally large cities. However, it is not so much the scale of wages as it is the arbitrary rules in effect in many of the unions, which demands the attention of the employers. The "closed charter" of a number of the unions did much, after the fire of 1906, to bring about an increase in the scale of wages which the circumstances did not warrant.

The Roofers' Union referred to above has a "closed charter." There are one hundred and twenty-five of the "elect." Under normal conditions the men in this union are employed at their trade more or less steadily, and during the busy seasons of the year they do not necessarily miss a day, and laborers have to be put on to get all the work done. In the event that laborers have to be employed, owing to the scarcity of journeymen, the contractor, according to a rule of this union, must pay such laborers $6.00 a day—the same wage as the regular journeyman. Such a rule as this is eminently unfair to the employer, who thus employs a common laborer to do work which is supposed to be a trade requiring mechanical knowledge and experience, and is obliged to pay such help at the same rate as he pays for the skilled labor. In other words, the employer will be obliged to employ the skilled mechanic only, and if he can not get him for $6.00 a day he will bid higher.

There are no apprentices to the Roofers' Union. Probably because it only takes three months for an intelligent man to learn the trade. There is, therefore, no chance for an intelligent and ambitious young workman to learn this trade, and in time earn the journeyman's exceedingly handsome wages. Such

a condition seems un-American and unfair to those who are not of the "elect," does it not?

Although fully aware of all these conditions, and a number of other equally injurious rules, the Master Roofers' Association of San Francisco recently considered entering into an agreement with its union, whereby the men were to receive $7.00 per day and foremen $8.00, in exchange for which concession the men were to agree to work for members of the Master Roofers' Association only. It is a pity that such a magnificent piece of folly could not be carried out, but it developed that such a feature to the agreement would be illegal and in restraint of trade, so that clause has been stricken out, and the whole agreement will probably be dropped.

This brings us to another phase of the situation: that of agreements between organized employers and their unions.

The so-called iniquitous "Bath Tub Trust" recently under investigation and indictment by a Federal Grand Jury, is represented in San Francisco, on the contracting end of the combination, by the Master Plumbers' Association. Nearly every master plumber in the city belongs to the association, largely because he is obliged to, owing to an agreement between their association and the union. As a result of this latter combination the union has a rule that only sons of journeymen may be apprenticed to the trade, only one apprentice may work to every four journeymen employed, no master plumber can apprentice his own son to the trade, and an unwritten rule that only a certain amount of work shall be done in one day. Here again we note that there is no chance for the ambitious young American to learn a trade which would pay him good wages and afford him a livelihood, unless his father is of the "elect" and is a journeyman.

It is not the intent of this article to decry the cause of union labor, but rather to show some of the evils which exist within its pale. The employer himself is largely responsible for these existing conditions, through the fact that he has been slow to organize and oppose unreasonable demands on the part of his employees. The Building Trades Council can hardly be blamed for endorsing a demand of one of its constituent unions. There was no opposition to the demand. It was going to benefit the members of the union affected by increasing their wages, shortening their hours or gaining them some other concession; so why not get it and let the employer look after his end of the business?

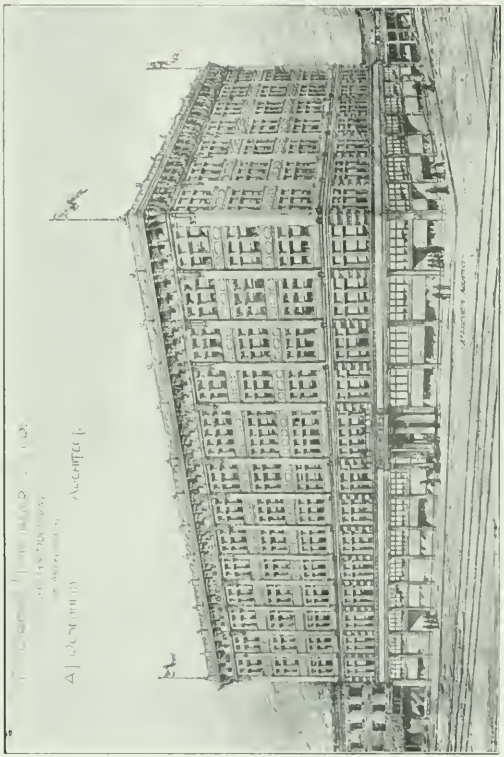
All credit is due to organized labor for gaining better wages, shorter hours and improving working conditions of the men. The trouble lies in the fact that they have in many cases gone too far. In many other cities this has led to their downfall and the "open shop." The latter leads to a disorganized condition of affairs, which is not really desirable if it can be avoided.

The plan of a local commission, appointed by the government, with power to regulate wages, hours, working conditions, etc., if adopted, might lead to a solution of the problem; but there is no talk of such a law being passed, and in the meantime peace and harmony prevails.

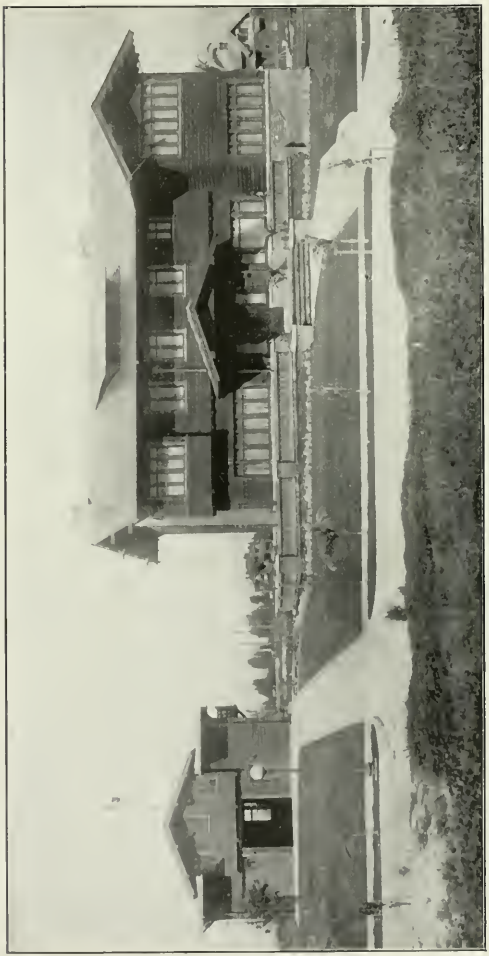
The architects and builders of San Francisco are looking forward to two years of great activity in the building business before the completion of the Panama-Pacific International Exposition in 1915, and the question of getting the men to do the work may prove a serious problem. The mechanics also are looking forward to a like prosperity, and with work plentiful at the present high scale they will not be disappointed, but those unions with a "closed charter," or rules which prevent the outsider from coming here to work, will have to bow to the necessity of the occasion, and if they are not willing to do so they will have to be severely dealt with.

Herman W. Hellman Building, Los Angeles
Alfred F. Rosenheim, Architect

Marble Corridor with Art Glass Dome, H. W. Hellman Building, Los Angeles



Perspective, Hamburger Department Store Building, Los Angeles.
Alfred F. Rosenheim, Architect



A Los Angeles Residence and Garage
Alfred F. Rosenheim, Architect

Los Angeles Architect Enters New Field of Work

THE many friends and clients of Architect Alfred F. Rosenheim of Los Angeles, will be interested in the following announcement:

"The undersigned respectfully begs leave to announce that, after thirty years of practical experience in the pursuit of his profession—during which period he has undertaken the design and construction of all kinds of buildings, involving an aggregate cost of millions of dollars, both in this city and the City of St. Louis—he has concluded, hereafter to devote the major portion of his time to "Office or Consultation" practice, but will continue to accept and execute such commissions for building as may be entrusted to him.

"In view of his long and varied experience, aside from his education and training he believes himself to be thoroughly fitted and equipped to act in an advisory capacity in connection with the following matters, namely: the development of properties generally; the construction of large and important buildings; the feasibility of any given project from the viewpoint of investment; adjudging the merits of the design, the planning and the general construction of buildings; the preparation of partywall agreements; adjusting differences between Owners, Contractors and Architects, arising from the misinterpretation of drawings and specifications, thereby obviating the necessity for litigation; furnishing expert testimony and briefly serving in any capacity in which his services may be of peculiar or particular value to his clients, basing his charges for such services on the time and the importance of the questions involved.

"It seems to him that Los Angeles and its vicinity offers an excellent field for the operation of a 'Specialist' in this particular line, and trusts that you will deem it to your interest to avail yourself of the services he has to offer, whenever the occasion demands.

"With grateful appreciation of the confidence reposed in him in the past, and soliciting your further valued consideration, he begs to subscribe himself,

"Very respectfully,

"A. F. ROSENHEIM."

* * *

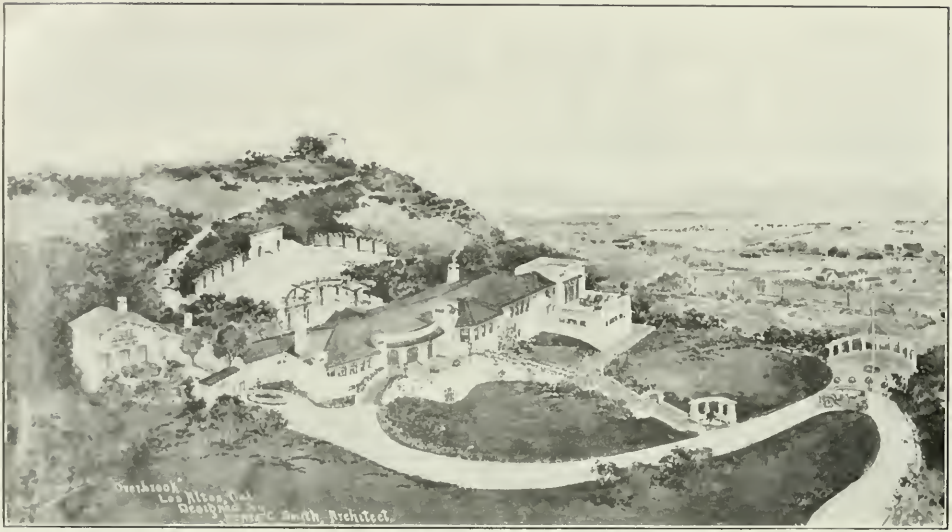
Munich to Have Model of World's Tallest Building

Mr. Cass Gilbert, architect and ex-president of the American Institute of Architects, is now in Europe. According to cable despatches he is on his way to Munich, where he will arrange to set up a model of the Woolworth building in the Deutches Museum.

This building, which is now nearing completion in New York is fifty-five stories—750 feet high—and the highest building yet constructed.

Fifty-two stories are built entirely of terra cotta, very light in color, varying from a cream to a buff and stronger yellow in the decorated courses, which are strongly in relief, emphasizing the light and shade. In the panels between the windows are touches of blue and green. Generally the color is used to accentuate the shadow actually cast, rather than for its own value.

Between the twenty-sixth and twenty-eighth stories are the horizontal bands of decoration, finishing in a beautifully modelled overhanging canopy, where the color is more pronounced and accentuated. At the twenty-ninth story the tower building begins. At the forty-second story the tower diminishes in size. At the forty-eighth story it again diminishes and the plan changes from square to octagon, with pinnacles at the corners. At the fifty-second story the sloping roof begins.



Country Estate of H. B. Wellman, Esq., Los Altos, Cal., showing Landscape Features — Henry C. Smith, Architect

ARCHITECTURAL LEAGUE
OF THE
PACIFIC COAST (Official)

LOCAL COMMITTEE OF EDUCATION.

President, Loring P. Rixford *Vice-President*, John Bakewell, Jr. *Secretary*, Wm. C. Hays

JURY.

Mr. John Bakewell, Jr. Mr. L. Bourgeois Mr. Wm. C. Hays Mr. Warren Perry
Mr. John Baur Mr. Arthur Brown Mr. John Galen Howard Mr. Loring P. Rixford

Atelier Work of the Beaux Arts Society

Seventy-two finished drawings were received by the local committee for judgment on December 21st and January 25th.

Following is a list of Drawings submitted and the awards made:

Class "A" Projet — "A Public Bath"

University of California

John Galen Howard } *Patrons*
Wm. C. Hays }

Gertrude E. Comfort — Mention.
Wm. J. Graham — Mention.
Arthur Jory
*Stafford L. Jory — Mention.
*Albert Loubet — Mention

Class "A" Esquisse-Esquisse Rendered Sketch — "A Private Hangar"

San Francisco Architectural Club Atelier

Arthur Brown, Jr. } *Patrons*
L. Bourgeois }

*E. Flanders — 3rd Medal
E. L. Frick
S. C. Flawn
C. I. Harrison
H. Michelson
Carl I. Warnecke

Class "B" Esquisse-Esquisse — "A Toy Factory"

13 Drawings rendered

Thomas Kent — Mention.

Class "B" Projet — "A City Church"

S. F. Architectural Club Atelier

Arthur Brown, Jr. } *Patrons*
L. Bourgeois }

*F. Kramer — Mention
P. T. Maloney
H. Schroder
*W. C. White — Mention
*E. Weihe — Mention

Atelier Warren Perry, San Francisco

W. I. Garren — Mention
W. A. Graham — Mention.

Atelier Schaller, Reno, Nevada

P. De Long hamp — Mention.

*Drawing [illegible] Honor award

Class "B" Analytique — "A Drinking Fountain"

S. F. Architectural Club Atelier

John Baur, *Patron*

A. Harvos — Mention.
W. A. Hubbert — Mention.
C. Reinecker — Mention.
H. Meess . . — Mention.
J. Cameron

S. F. Architectural Club

Arthur Brown, Jr. } *Patrons*
L. Bourgeois }

A. Bien — Mention.
J. C. Davidson — Mention.
B. J. Gordon
P. R. Gailey — Mention.
L. Kruse
L. A. Keyser — Mention.
C. Payne — Mention.

S. F. Architectural Club

Loring P. Rixford, *Patron*

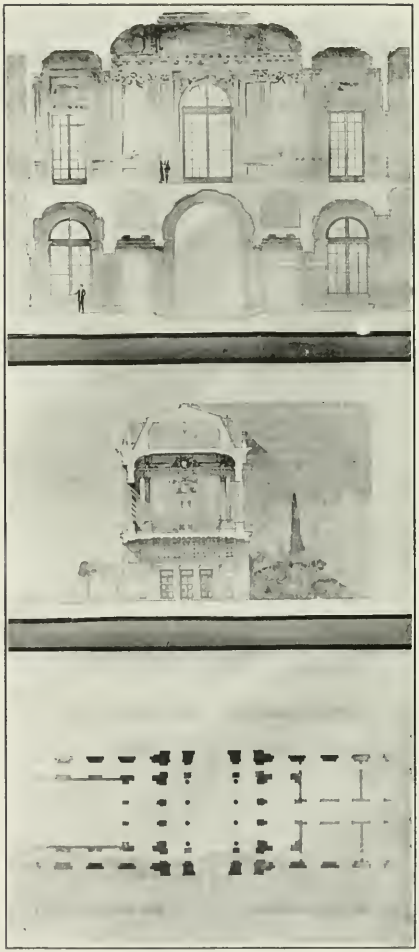
E. L. Boldemann — Mention.
R. M. Carlyon — Mention.
F. R. Holmes
R. L. Kahn
A. H. Mellberg
G. L. Rosebrook — Mention
Geo. W. Reed
H. W. Villalon
W. C. Myall — Mention.
F. Beck
A. Kuhn — Mention.

Atelier Warren Perry San Francisco

W. A. Graham — Mention.
A. R. Monroe — Mention.

Atelier Allison-Davis, Los Angeles

R. M. Heggie — Mention.
Chas. A. Hill — Mention.
R. B. Paige — Mention.
J. J. Klima — ....



A Drawing Through a Building — *Chandler J. Harrison*

A Driveway Through a Public Building — *Ray T. Locke*

Class "B" Analytique—"A Drinking Fountain" (Continued)

Atelier Geo. C. Sellon, Sacramento, Cal.

W. E. Manhart

Atelier Schadler, Reno, Nevada

E. N. Damon

Atelier David J. Myers, Seattle

Don M. Clippenger — Mention.
A. M. Russell — Mention.
Wayne Yates — Mention.
L. L. Huot

Portland Architectural Club

Ellis F. Lawrence, *Patron*

John Stanton
Jamieson K. Parker — Mention

B. C. Society of Architects, Vancouver, B. C.

R. A. Nicolais, *Patron*

S. Dresser — H. C.
W. H. Fey — Mention.

Special Comment

Among the drawings submitted, there were several which are worthy of special comment.

The City Church, by H. C. White, a charming study in late Gothic, was very well composed, and in proper scale, simply and effectively rendered.

The City Church, by Fred M. Kramer, although not entirely original, was well carried out, and simple and charming in composition.

The City Church, by Ernest Weihe, a clever sketch in Romanesque, was very effective and very original.

Among the order problems there were a number of serious studies, notably that of Mr. Wayne Yates of Seattle, a study in Greek Ionic.

The order problem submitted by Mr. A. Harcos, although rather too elaborate for an analytique, showed some excellent drawing.

That of Mr. H. Meess is worthy of comment for the careful study of detail, and that of Mr. C. H. Reinecker for its simplicity of composition and rendering.

Among the drawings recently sent to New York for higher award, The Class "A" Esquisse-Esquisse, "A Private Hangar" by Mr. R. F. Flanders, received a 3rd medal; and the Archeology Problem "A Court Yard" (in the Pompeian style), by Mr. A. Harcos, received a 3rd medal.

LORING P. RIXFORD.

A Drinking Fountain *Wayne Yard*

Safety in Concrete Construction

A LITTLE knowledge is a dangerous thing" is an old adage the truth of which was never better emphasized than in the present epidemic of concrete building failures, says the Engineering Record, in editorial comment upon the recent failure of a concrete theatre building at Cincinnati. Hardly a week has gone by recently without an accident of some sort, generally attended by loss of life or serious injury to workmen. While the causes are various, there is little doubt that the apparent simplicity of concrete work, both as to design and construction, has led both designers and builders to feel that the little knowledge they have is all sufficient for the construction of concrete structures. But their little knowledge is far from adequate, as is evidenced by the failures—and is dangerous, as the record shows.

The overconfidence is probably due in part to the large number of books and other publications on concrete which say but little about the precautions necessary and the conservatism desirable in such work. To the novice a concrete building is a series of slabs, beams, girders and columns, all easily figured by simple beam and column formulae. Any concrete workers' handbook gives these formulae and, in addition, tables and diagrams which resolve the simple to greater simplicity. Unfortunately a concrete structure is not an aggregation of simple members held together by some wonderful magnetic force, but has rigid connections, which introduce factors requiring consideration. Few engineers really understand the internal stresses in monolithic structures, and lamentably few designs when considered with this point in view are found adequate. One engineer who did much work in concrete in the earlier days of its rapid increase in popularity and who has maintained a conservative position as to design, has had to turn to other branches of the engineering profession because his structures were more costly than those of designers who did not appreciate the necessity for providing for the stress due to monolithic action. Failure to take into account these factors is responsible for the defects now showing up in buildings erected four and five years ago and which will soon require extensive repairs. Poor materials are shown up in a comparatively short time, but inadequacy of design is more likely to be responsible for defects which do not develop until three, four or more years after construction. . . . . It seems so simple to mix cement, sand, stone and water, and to embed it in some steel rods, that the fact that a complicated theory underlies the construction is not apt to enter the untrained mind. Consequently men who would not dare to undertake steel construction are found ready to try their hand at concrete.

To prevent disasters more stringent standards and more exhaustive investigation of submitted designs by building departments have been proposed, and while these may help, it is unwise to shift to a public authority any greater burden than necessary. Engineers can do their part by insisting upon adequate designs despite higher costs and by refusing to accept retainers to design concrete structures when the erection will not be in their charge. If an owner violates his agreement to have the engineer supervise the construction the latter can at least make plain that the owner takes on his shoulders the liability for the safety of the structure—a matter not at all trivial when a possible toll of human life is involved. Undoubtedly, too, the engineer's stand would be strengthened if courts made it clear that owners would be held criminally liable for accidents, fatal or otherwise, due to incompetence.

Furthermore, engineers should have the construction program clearly in mind in designing structures, and the design should make ample provision for the removal of the forms, in the given time. The cost of the additional material required for insuring safety upon the removal of forms in seven days is more than offset by the saving in forms and by the consequent insurance against accident.

Advertising*

By J. A. BRIED

ADVERTISING has been defined by our old friend Webster, I believe, as—the turning of the attention of others to—say any particular thing.

Modern developments in the art of advertising have devised many ways of forcing the public's attention to the contemplation of almost any object desired.

The art of advertising, like the science of medicine, law or the ministry, has broadened out until its methods embrace everything from the legitimate conscientious effort to the very depths of quackery.

It stops at nothing! Drums are beaten—cannons shot off to attract the public's attention to anything from a new scientific discovery to a fake land subdivision scheme—a new religious movement—a breakfast food—a new brand of watered alcohol bottled in bond—or some new flavor in cigarettes.

No matter what the object advertised or the method employed, if it succeeds in attracting the peoples' attention it is considered good advertising for it has accomplished its purpose—but it is the buying public who have to choose between the swindle and the legitimate project.

Our advertising does not partake of the spectacular, our entire advertising efforts being summed up as simply the attempt to tell just what we have to sell and why it's worth the buying, and since the number of publications wherein we can do the telling is limitless—and since the amount of money we can spend in furthering publicity is limted—we have carefully chosen what we consider the one best journal in each class and taken sufficient space therein to tell our story, and—if we tell our story simply and forcibly—and,—if we succeed in telling it to most of the users of our line of machinery along the Pacific Coast—people within our reach and with whom we can do business—then the purpose of Meese & Gottfried Company's advertising will have been fulfilled.

The power of advertising is infinite—for almost everything we use—we use because it was first called to our attention through a printed ad—or a verbal ad—that is—someone told us about it.

I often hear pessimists and dyspeptics generally, say, that the money spent in advertising is just simply thrown away for there is no absolute proof that the money spent for advertising ever came back.

Many arguments against advertising seem logical enough and yet—in spite of being unable to trace directly the benefits derived from advertising, we positively know that most of the largest and most successful manufacturers today are as a rule the heaviest advertisers—and we all know the reluctance we feel about buying things we never heard of, or saw advertised—and this effect on us is likewise experienced by everyone else, and I don't doubt that a manufacturer of the very elixir of life itself would fail, if the public did not know what he made or where to get it.

At the Ad Club the other day, I heard a talk on the advertising of a San Francisco product—Ghirardelli's Chocolate, and it appears that the product of their factory eleven years ago was about one million pounds per annum.

Today—after a constant though conservative advertising campaign—it has increased to thirteen million pounds, thirteen hundred per cent increase in eleven years! But, the advertising alone did not build up the Ghirardelli Chocolate business, for the public does not buy advertising—it buys goods—and while it is easy enough for the Ad writer to paint ideals and praise loudly the merits of the factory product—unless his efforts are backed up by all the force of the constructive departments—and unless every man's work is carried out with

*Extract of an address at the annual meeting of the Meese & Gottfried Co., San Francisco.

the idea of making those ideals come true—the advertisements are worse than useless—they become but lies—and when once accepted as such by the public through the baneful impression disseminated with faulty product, all effort of pen, all force of words or salesman's cunning, will be found powerless to re-establish the confidence so easily destroyed.

* * *

American Architecture as Seen by the Humorist

GEORGE FITCH, the well-known syndicate humorist, turned his pen to the subject of "Architecture" recently with this result:

"Architecture is the art of designing a building which will not only be handsome today, but will be handsome fifty years hence when the styles have changed.

"There are thousands of handsome structures in America today, but that is largely because we have gotten used to them. There are also thousands of middle-aged buildings which cause the casual observer to sigh for a pair of blinders. Most of these buildings were handsome when they were designed, but the people have recovered from the taste which allowed them to admire their particular varieties of warts, protuberances, bulges, fret-work, low-browed porches, and jig-sawed jamborees.

"Architecture is one of the noblest of callings because it produces beauty which makes glad the eye from century to century. The patient architects who designed the cathedrals of Europe eight hundred years ago for two shillings per day have long been dust, but people still travel thousands of miles to view their work and to grow and expand esthetically while gazing into the soaring vaults of pillared naves.

"America is full of frame houses designed by occupants of some violent ward; of modest homes designed by a cutter of cheese; and of mud colored railroad stations built by a barn builder who has fallen from his high calling. In time the men who perpetrate these things die but the buildings live on in spite of our beneficently high fire losses.

"After a good architect has lived around these things for a while he renounces his citizenship with a throbbing cry of pain and flees to Rome to live among the ruins of 2,000 years ago when they tried architects for their buildings and hanged them if they didn't suit."

* * *

Painting Galvanized Iron

IN some inland cities the writer has observed the police patrol booths, or boxes of galvanized sheet iron, painted directly on the metal with green oil paint, peeling off in great shreds from six to nine months after being coated. The reason for this peeling is readily explained. The paint, an oil color, being applied directly to the metallic zinc that forms the galvanic coating, which probably in addition was greasy from handling, dried slowly and formed a soap on the linseed oil coming in contact with the zinc, and therefore had no hold, the heat of the sun doing the rest.

Now, as to the remedy, that is, a method that will allow paint to hold on such a surface as it would to ordinary iron, etc. Galvanized iron being prepared by dipping the ordinary iron after pickling into baths of melted zinc and melted tin should be treated as ordinary sheets of zinc require before being painted. Metallic zinc oxidizes to some extent on the surface; that is, there is a fine crust formed, a natural incrustation or patina, as the artists say when speaking of copper or bronze figures. This crust or film is gray and consists of oxide

of zinc, which must be removed before priming, so that the first or priming coat comes in direct contact with the clean zinc surface. It has been said that in the case of galvanized iron it should be washed with dilute acid until very fine pores appear in the galvanic coats, on which the paint would take a clinch, so to speak. This is nonsense, as it would make the galvanic coat entirely useless and the iron still weaker than it has already been made by the pickling process before galvanizing.

On small inside work, such as zinc-lined bathtubs, pails, zinc plates, etc., the best method is to first clean the metal from old paint, grease, etc., with soda water, rinse well and allow to dry. By soda water is meant the ordinary solution of sal soda in warm water, strong enough to remove ordinary grease. The proportion should be about one pound of soda to one gallon of water, or four ounces of soda to a quart of water. This is merely to remove the grease that is apt to cling to zinc surfaces from the touch of sweating hands, etc. Next, prime with zinc white, thinned with half oil and half turpentine. After applying the prime and before it has time to set take a piece of lump pumice and rub the surface as a panel is rubbed for polishing or varnishing. This will make a perfect union between the primer and the film of zinc oxide that has formed on old metallic zinc by long exposure, and no paint will ever peel off.—The Decorator.

* * *

Steel Column Connections in Reinforced Building

CONCRETE-ENCASED steel columns are now sometimes adopted in reinforced concrete buildings, instead of reinforced concrete columns. As pointed out by The Engineering Record, economy of floor space is the predominating factor in deciding on this departure. In some buildings, however, where traveling cranes are used, the vibration and large bending moments transmitted to the columns from the cranes are also important considerations.

Since this combination of steel and concrete construction is in an early stage of development, it is well for designers and contractors to realize the great importance of careful design and construction at connections of large reinforced girders with steel columns encased in concrete. In such cases, large end shears must be transmitted from girders to columns. In addition to making proper provision for these shears in the girders, careful consideration must be given to the bearing pressures on the concrete where it comes in contact with its seat in the column. Reference is made by a contemporary to a building where large angle seats are provided to assist in transferring the end shear into the column which extends above the concrete girder. Here the seat takes the form of a bracket riveted to the column face. Designers must use stiffeners under the outstanding legs of these bracket angles to insure proper strength against bending; and a sufficient number of rivets must be employed to carry the stresses. Where the steel column stops at the bottom of the girder, it is an easy error to place a small cap on the column and assume that there is sufficient area to keep the bearing stress on the concrete within safe limits. This error should be avoided.

Briefly, this is a matter of design where every detail must be determined with care, and no guesswork is permissible. The problem is simple, but it must receive attention in every case where this combination of steel and concrete is used. In some designs, reliance may be placed to some extent on the adhesion between the concrete and steel to transmit some of the end shear; but on the whole it is much better to put all the eggs in one basket, and make the basket strong enough to hold them. Adhesion alone will not do the work. To make it available, the column must extend to the top of the girder, and this

at once reduces the section effective for shear. It is possible, however, in some instances, to extend the column up into the girder by using a plate extension at the upper end of the column, thus affording an area of contact between girder and steel, through which stress may pass by adhesion. In such cases the edge of the plate should be placed perpendicularly to the plane of the girder, in order to permit the main reinforcing rod to pass. Contractors are interested in this matter because the best concrete is needed to develop proper bearing and shearing strengths; and it would be well for them to call the attention of concrete foremen to the importance of close supervision while concrete is being placed in such work as is here discussed.

* * *

Concrete Apples Do You Believe it?

A surprising result of the use of cement has been discovered by a New Jersey farmer, according to the always truthful daily press. This farmer had read somewhere that all that was necessary to arrest decay in fruit trees was to cut out the rotten part and fill the cavity with cement mortar. One of his pet apple trees was languishing away, and its crop yearly diminishing, so he decided to put his knowledge into effect. A large quantity of cement was applied to the tree, and the farmer, much pleased with the operation, went around predicting that he would have the best fruit in town this year. Last week he had a party of friends out to dinner and at the table he handed each of them an apple from the tree. All made efforts to penetrate the skin but in vain, and when the farmer tried he broke a tooth. The apples, if one is to believe what he reads, were as hard as stone.

* * *

As Long, But Not So Thick

A Swede was being examined in a case in a Minnesota town where the defendant was accused of breaking a plate glass window with a large stone. He was pressed to tell how big the stone was, but he could not explain.

"Was it as big as my fist?" asked the nervous judge, who had taken over the examination from the lawyers in the hope of getting some results.

"It ban bigger," the Swede replied.

"Was it as big as my two fists?"

"It ban bigger."

"Was it as big as my head?"

"It ban about as long, but not so thick," replied the Swede amid the laughter of the court.—Saturday Evening Post.

* * *

Disadvantages of a Hardwood Floor Over Concrete

In speaking of the disadvantages of a hardwood floor over concrete, Leonard C. Wason, president of the Aberthaw Construction Co., Boston, remarked that besides the cost there is the added dead weight of the screeds, cinder fill, under floor, and upper floor. Dead weight adds to the cost of the supporting construction of the foundations and adds other cost besides that of the floor itself.

* * *

Backward Season

"Hubby, you promised me a handsome spring dress," reminded the master plumber's wife.

"I know I did, but first let's see if we are going to have a spring," said her wise husband.

Cement Production for 1912

THE total quantity of Portland cement manufactured in the United States in 1912 was approximately 81,941,998 barrels. It is believed that this estimate is within 1.5 per cent of the exact figure. This quantity represents an increase of 3,413,361 barrels over the 78,528,637 barrels manufactured in 1911, or 4.3 per cent. The shipments of Portland cement during 1912 are estimated at 84,750,291 barrels, compared with 75,547,829 in 1911, an increase of 9,202,462 barrels or 12.2 per cent. The production in 1912 was thus held in check sufficiently to permit a material reduction in the stocks of cement at the mills at the close of 1911 which amounted to nearly 12,000,000 barrels.

The continued increase in the production of Portland cement is significant in view of the fluctuations in the output of other leading mineral products such as coal, iron, and copper. The curve of production of Portland cement, although not now rising at so rapid a rate as during 1909 and 1910, is still pointing upward and has yet to take its first downward drop.

Practically all mills report having to contend with adverse business conditions during the first six months of the year. Prices were lower than the average for 1911 during this period, and some plants reported the lowest prices for which they had ever sold cement. After the middle of the year, conditions improved materially and generally during the last four months of 1912 the demand for Portland cement was sufficient to keep most mills running at full capacity. In the Lehigh district production was curtailed slightly in order to diminish accumulated stocks. Production and shipments in New York show the greatest proportionate increase of all districts. In the southeastern states the increase in production and shipments was gratifyingly large, as it was also in the vicinity of Chicago, and in Iowa and Missouri. Certain plants in Kansas were much hampered by the failure of the supply of natural gas, and were obliged to shut down temporarily while installing coal-burning devices. This feature contributed to the decrease in production in the great plains states. In the Pacific Coast states and in certain Rocky Mountain states production did not keep pace with that of 1911, owing to the lack of demand for cement for large public works.

The average price for the whole country of Portland cement per barrel in bulk at the mills will probably show a slight decrease when complete returns are received, although at the close of the year prices were much better than they had been during the last two years.

Pacific Coast—The states of California and Washington produced approximately 7,258,542 barrels of Portland cement in 1912, compared with 7,278,274 barrels in 1911. This represents a decrease of 19,732 barrels, or 0.3 per cent. The shipments of Portland cement in 1912 approximated 7,483,852 barrels, compared with 6,770,242 barrels shipped in 1911, an increase of 713,610 barrels, or 10.5 per cent. There were 11 mills reported as active in 1912, the same number as in 1911.

* * *

$1,000,000 County Hospital Building Competition

The Board of Supervisors of Alameda County, California, have instituted a competition for the selection of an architect for a group of Infirmary and Hospital buildings to cost in the neighborhood of one million dollars.

The program has been prepared by Henry H. Meyers, architect, of San Francisco, and any information relative to the program can be obtained by addressing him at the Hall of Records, Oakland, California.

The Competition for the Indiana Centennial Building

THE singular project initiated by the State of Indiana for procuring plans for the erection of its Centennial building upon a site not yet selected and without expense to the State has progressed so far that the Commission charged with its execution has made public its report. The report deals at length with the difficulty of finding a site and also tells of the Commission's discovery of the American Institute of Architects.

The report says: "The surprising fact was disclosed that there exists in the United States a combination of practically all architects amounting to what is now commonly denominated a 'trust.' This combine calls itself the American Institute of Architects. Your Commission was notified that no plan could be submitted by any architect belonging to this combination unless the Commission first formulated a 'program' setting forth many details.

"In a good faith attempt to meet this objection the Commission procured a program to be drawn up by Bohlen & Sons, members of the American Institute of Architects. This being submitted to the authorities of the Institute was, after months delay, rejected not because of any defect in the program, but because Indiana had not yet by law appropriated the funds for the educational building and for the further reason that this Commission could not guarantee that the Architect, whose plan might be approved by you, would be paid his fee and receive the contract to act as supervising architect.

"In other words, this body of architects, having first put the Commission to the expense and trouble of getting up a program, then raised a question which, if it had been raised in the first place, would have rendered the program unnecessary. Your Commission was so anxious to obtain plans that it sought some way in which it could give a legal guarantee and satisfy these particular gentlemen, but no way could be found although the attorney-general was appealed to for an opinion. Because of these rulings members of the American Institute of Architects, comprising, as already stated, substantially all the architects in the country, would not compete. The law required competition. Hence no plans could be procured to present to you, and your Commission so reports."

It is not to be wondered at that the publication of the report of the Commission brought forth a sudden crop of editorials in the papers of Indiana denouncing the Institute and calling on the Legislature to employ, if such a person existed, an architect who was not a member of the "trust."

The most immediate and effective answer to the unwarranted statements of the report of the Commission was that contained in an interview with Mr. Herbert W. Foltz, recently Chairman of the Indiana Sub-Committee on Competitions and now Chairman of the Indiana Committee on Public Information. Mr. Foltz stated the Institute's position with great clearness, the grounds of its opposition to competitions in general, the principles that should govern their conduct, the more frequent abuses connected with them and the efforts of the Institute to abate such abuses.

"The American Institute of Architects is opposed to competitions on the ground that they are, as generally conducted, uncertain in their results and wasteful of time and money," said Mr. Foltz.

"They are sometimes necessary, though, particularly in connection with proposed public buildings. The institute, through its committee on competitions, has stated the principles which should govern the conduct of competitions. In stating these principles it should be understood that the

position of the institute is by no means an arbitrary one, since it governs the action of none but its own members and of chapter members allied with it. A competition may be conducted without the sanction of the institution, to which only its own members would therefore be ineligible.

"In view of the fact that only about one-fifth of the practicing architects of the country are affiliated with the American Institute, the possibility of any Architects' Trust at the present time would seem to be very remote."

* * *

English Building

IN THE big building era in which this country is immersed it is interesting to get a comparison with English building methods, such as F. D. Huntington, an American who has engaged in great British building enterprises, gives to the New York Times. Mr. Huntington says the British workman is on the whole less efficient than the American, due greatly to the much beer that he consumes. This superinduces a slowness that offsets much of the advantage of the lower wage. Added to this is a traditional habit of mind that the employer shall have just as little as the employe can give him. For instance, when the whistle blows in this country our masons lay the first brick. When it blows in England the masons are loafing somewhere about and take their time going to the job. This adds to the cost of every British undertaking.

But British bricklayers are superior to ours, Mr. Huntington says, and their heavy laborers are far superior. These include makers of concrete, workers in stiff clay, excavators of rocks and diggers generally. Both they and the bricklayers take a real pride in their work that is not seen in this country.

But outside of these two lines, Mr. Huntington thinks that American labor is superior, although it is marred by our wasteful methods. Among them is scaffold construction. We use new lumber which by the use once becomes second hand. The English use scaffolding especially designed, connected by ropes and chains and not nailed, so that it is used over and over again. In derricks also we are inferior to the English, because, he thinks, they use them so much more than we do. They have not come to the steel construction in anything like the degree that we have, and hence have need of more derricks. But they are taking to this construction and are learning how to use machines of all kinds in building, as we do.

One thing in which we lack is the quantity surveyor. He has existed in England since the earliest time and is the best thing that England could give us in the building trades. He makes an itemized bill of all material that is used and a statement of all the operations that each craftsman must use to produce the desired result. In our country when bidding on work each contractor takes out for himself a more or less accurate set of "quantities."

For example, if oak screens are specified and a change to mahogany is desired the quantity surveyor will settle the difference of the cost on a basis absolutely fair to owner and to contractor. At the end of the job he makes a valuation of every alteration from the original plans.

Of course, he sometimes abuses his office and "stands in," with the contractor. Another evil is that owing to the quantity surveyor the English architect does not work out his design before the building begins. Practically he makes his plans as the structure rises relying on the quantity surveyor at every stage.

Among the Architects

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(ORGANIZED 1857)

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Oakland Architectural Association

Meets Third Monday Each Month.

PRESIDENT.....LOUIS S. STONE
VICE-PRESIDENT.....C. W. DICKEY
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Removal Notices

The following well known contractors have moved from the Monadnock Building to the new Sharon Building on New Montgomery street, San Francisco C P Moore Building Company, F J Klenck and Lange & Bergstrom Architect Geo W Kilham has also moved to the Sharon Building as has H J Brunner, C F

Automobile Building for the 1915 Exposition

Permission has been granted by the Panama-Pacific International Exposition, to the National Association of Automobile manufacturers to erect a motor transportation building on the 1915 Exposition site. This structure is to house the most attractive automobile show ever held in the world, and which is to last through the entire period of the International World's Fair in this city.

Announcement of this was made by Director of Exhibits, Asher Carter Baker, who stated that the automobile manufacturers and allied industries fully satisfied that the physical area of the Transportation Exhibits Building did not permit space to be alloted of sufficient dimensions to accommodate these industries, had asked permission to erect its own building. This building is designed by G Albert Lansburgh of San Francisco, and it has been approved by the Architectural Commission.

The design of this building is one of the most modern notes in the composition of the Exposition, and harmonizes admirably with the general classic lines established by the Architectural Commission. In this building the processes of manufacture and assembling will be shown and the importance and extent of this great industry will be placed before the world. The building will be located south of the Machinery Palace adjacent to the Concession Department and it forms part of the main composition of the Exposition.

The industry will expend $90,000 on the interior decoration. It promises to be the most attractive interior of any of the Exposition Buildings. It will be one harmonious decorative note. This structure will be one of the largest of the Exposition Palaces. It is approximately 275 feet front by 800 feet deep, covering somewhat over five acres.

Bungalow Competition

During March and April the Indianapolis Exhibit Company, Hume-Mansur Building will have a prize competition by the Indianapolis Architectural Club for the best designs in bungalows ranging under $3,000 About thirty contestants are entering the competition

This is the regular annual competition given by The Indianapolis Exhibit Company in its endeavor to educate the building public into the employment of an architect, even for low priced work

The Indianapolis Exhibit Company, is permanent building show, indorsed by the Indiana Chapter, American Institute of Architects, for the purpose of displaying and demonstrating materials pertaining to the building line to architects and builders

Northern California Chapter, A I. A.

San Francisco Chapter, American Institute of Architects, hereafter will be known as the Northern California Chapter the same as Los Angeles Chapter is designated Southern California Chapter. Article No. 1 of the constitution has been amended to read as follows:

"The corporate name of this Society shall be the Northern California Chapter of the American Institute of Architects and it is so incorporated under the laws of the State of California"

Mr. Mooser gave his reason for offering the above amendment as follows.

"In carrying out the work of the Chapter, particularly the sub-committee on Competitions, outside of San Francisco, the impression prevails that the Chapter is a purely local institution. As the territory of the Chapter includes all of Northern California and the Southern California Chapter has jurisdiction over the Southern half of California we deem it a matter of expediency that the San Francisco Chapter should change its name to the Northern California Chapter in conformity with its jurisdiction."

Los Angeles Chapter Meeting

A stand in opposition to single rooms in apartment houses was taken by the Southern California Chapter American Institute of Architects at its regular January meeting. This conclusion was reached after a short address made by Dr. Elbert Wing, of the Housing Commission of Los Angeles. He stated that the intercommunication of single rooms in apartment houses has a tendency to break down public morality and asked the local chapter to oppose the construction of apartment houses in this manner A motion was immediately made and carried that single rooms be dispensed with. Several members were not in favor of the action taken, stating there should be a certain percentage of single rooms allowed for various reasons. J J. Backus, chief inspector of buildings, was of the opinion that this is more a matter of inspection than construction.

Col. J B. Lankershim was present and gave a talk on his travels through Europe At the conclusion of his address Mr Lankershim was elected an honorary member of the Chapter

J W Mitchell, honorary member of Southern California chapter, related incidents that happened on his trip abroad, telling principally of his observation of the progress of architecture in Europe as compared with that in this country The foreign architects are progressing rapidly, but the American architect is achieving much more Mr Mitchell stated that he did not see the progress in the East along architectural lines that he has found in California.

Hotel for Yosemite

Frank A. Miller, proprietor of the Glenwood Mission Inn, Riverside, is negotiating with the United States government for a long-time lease on a site for a large modern tourist hotel in Yosemite Valley. Mr. Miller's plan is to construct a hotel with rock native to the mountains in Yosemite Valley, at a cost of $250,000. Architect Myron Hunt, of Los Angeles, and Pierre Zuceo, an engineer of San Francisco, will design and prepare plans for the proposed structure. It is said actual construction on the new hotel will commence this spring. Mr. Miller also contemplates erecting an auxiliary to the main hotel at Glacier Point, the cost of which is placed at $75,000.

Architect Marsh Busy

Archt. Norman F. Marsh of Los Angeles returned recently from Arizona and the Imperial Valley, where he secured commissions for the preparation of plans for three school buildings aggregating $200,000 in cost. One of these is a grammar school structure, at Phoenix, to which half of the recent $200,000 bond issue will be devoted. The others are a $50,000 industrial arts building at Tempe, Ariz., for the Arizona State Normal school, and a $50,000 high school administration building at Brawley, which will be the nucleus of a contemplated group of buildings.

Oakland Y. W. C. A. Building

Plans for the new $225,000 Young Women's Christian Association building in Oakland have been completed and steps are being taken for the breaking of ground at an early date in the hope of having the structure completed and ready for occupancy within seven or eight months.

The design was drawn by Miss Julia Morgan, architect, who recently returned from a tour of eastern cities where she made a study of Y. W. C. A. club houses for the purpose of getting ideas that might be utilized to advantages in the erection of the Oakland Y. W. C. A. home. A hotel for young women will be a distinct and separate feature of the building.

Moving Picture Plant

Architect G. W. Page of San Jose is preparing plans for a moving picture plant to be built at Niles, Cal. It will consist of four buildings, one of which will be entirely of glass and will be used for taking the films. Other buildings will include a stable, garage, scenic room, offices, etc. The plant will cost close to $50,000.

Architectural Exhibit at Berkeley.

Plans of several of the most important structural enterprises now in course of building, as well as many structures being contemplated, were shown at the rooms of the Hillside club in Berkeley last month.

Of especial interest was the perspective of the Sather campanile to be erected on the university campus, the drawing being exhibited by John Galen Howard. He also exhibited photographs of the Alaska-Yukon-Pacific exposition buildings at Seattle, and sketches of the landscape architecture of St. Francis Wood, a new residence subdivision of San Francisco.

Bernard Maybeck showed a number of interesting house plans and some studies of buildings for the exposition.

Other architects who were represented were: John Hudson Thomas, William H. Ratcliffe Jr., of Berkeley, William Wollett of Oakland, John White, L. B. Dutton, G. A. Applegarth, Miss Julia Morgan, Righetti & Headman, Warren Perry and Coxhead & Coxhead.

San Diego Architects' Meeting

The San Diego Architects' Association held its January session at Rudder's Banquet Room, a large percentage of the members gathering around the dinner table. The feature of the evening was a paper on "The Manufacture and Use of Faience Tile," delivered by C. D. Nordhoff, secretary-treasurer of the California China Products Co. of National City. Three new members were elected to the Association: Messrs. Frank Meade, V. O. Wallingford, and C. M. Winslow. The officers of the Association are W. S. Hebbard, president; S. G. Kennedy, vice-president; Robert Halley, secretary; G. A. Hanssen, treasurer.

$300,000 for Street Work

Knapp & Woodard, 741 Consolidated Realty Building, Los Angles, have been appointed city engineers of Manhattan Beach, now incorporated as a city of the sixth class. About $300,000 worth of street improvement work is to be gotten under way within the next three months.

Country Club House

Architects Lansburgh and Schnaittacher of San Francisco are completing the plans for a handsome club house for the Beresford Country Club. Contracts for the building will be awarded shortly. The structure will cost in the neighborhood of $60,000.

Granted Certificates

The Northern District of the California State Board of Architect has granted certificates to practice to the following: Max Geist, Henry B. Monges, Jr., and Alden L. Ellis.

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IS THE SAN FRANCISCO CITY HALL TO BE FIREPROOF?

Lack of funds is given as the reason for substituting wood trim for metal trim in the new San Francisco city hall and thereby making it susceptible to the ravages of the flames instead of providing a strictly fireproof building. When the people voted millions of dollars for a new municipal building they supposed, of course, that sum was ample to provide a building that would not burn. But it seems they were mistaken for the architects have announced that it has been decided to take bids both ways for metal trim and for wood trim—with the chances nine out of ten that the wood trim will be used. It is argued that the additional cost of metal trim can be judiciously expended in exterior architectural adornment. Bah! Again we have an example of the "penny wise, pound foolish" policy.

Of course, the new building will contain the archives and public records which vitally concern not only the people of San Francisco but others residing elsewhere. The structure as designed is admittedly of Class "A" type, excepting as to the uncertainty of making it absolutely fireproof by installation of fireproof doors, windows, etc., and the further installation of fireproof furniture and fixtures.

Other cities throughout the country realize the danger of thus exposing their public records to fire and they have designed their buildings with the idea of making them absolutely fireproof. Los Angeles has just completed a county building thus equipped. Sacramento is completing its Court House on similar lines. Sonoma County, Placer County, and even Northern Siskiyou and Washoe County, Nevada, have housed their public records in non-burnable buildings. Several Eastern cities and at least one state, have passed laws prohibiting the storing of public records in other than fireproof buildings, rooms or storage vaults.

The difference in the cost between fireproof construction of doors and windows as against wooden construction is infinitesimal when we consider that by making the building fireproof, first from the exterior hazard, and secondly by confining any fire locally on the inside and preventing its spreading from room to room and floor to floor, a great service will have been rendered to future generations by preserving public records of incalculable value.

SPLENDID ADVANCE MADE BY SCHOOLS OF ARCHITECTURE

If the advance of the architecture of the country during the life of most of the architectural schools might be any measure of the efficiency of the schools, nothing more need be said. Rather, say the tide of better feeling has raised the schools, and they in turn have wielded an influence that has helped carry the tide to a flood, and we come nearer the truth. Be that as it may, classes of students working and thinking along similar lines, under acknowledged guidance, is a real vital force that cannot fail to make itself felt, especially as the students of yesterday become the business heads of today.

INDIAS NEW CAPITOL—A PROBLEM

Architects the world over will be interested in the problem confronting the government of India in the selection of a suitable type of construction to be used in the new capitol. The question that has presented itself to those who have taken up this important matter, is whether they shall adopt the art of the country as their inspiration or make the new capitol a monument of Western genius.

It is declared that the site that has been selected is unsurpassed. Its natural advantages are such as to lend themselves to any scheme which the government may decide to carry out.

However, there is felt to be imperative necessity to make the structure conform to a scheme which, while expressive of British supremacy, will fit in with the masterpieces of native architecture, with which it is surrounded.

A distinctly Occidental capitol would be so obtrusive that many consider it would be an eyesore, not only to the British, but to the natives, who would accutely realize that it typified the rule of a foreign nation, which holds the land by virtue of conquest.

However, to bend the native art to the expression of modernism's triumph has been declared to be hopeless. An architect has pointed out that the Indian type is not possessed of the "constructive and geometrical qualities necessary to embody the ideas of law and order which have been produced out of chaos by the British administration."

Want State Law Repealed

At the annual meeting of the American Institute of Architects held in Washington recently the Standing Committee on Competitions reported continued satisfactory progress of the Institute's campaign against the evils of competition practice. Many factors have so combined as to make the year just passed most notable in the long history of the Institute's efforts to that end.

The Sub-committee for Southern California reported two competitions approved by the Institute but says that in California the law of 1872 makes obligatory the selection of all architects for public work by competition and imposes conditions so fundamentally at variance with good practice that members of the Institute cannot take part. Work costing over a million dollars has thus gone, within the last year, to persons outside of the Institute who were willing to comply with the law. Steps are being taken to secure a repeal of the law The report concludes, "If we do not succeed, then every bit of work in the State of California will have to go into the hands of those who do not belong to the Institute, unless the Institute sees fit to make a special provision to cover public work which must be done under this law."

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Four Inch Concrete Road Base Stands Severe Test

BECAUSE of complaints received from many sources to the effect that the concrete base being laid on the new California state highways is not sufficiently thick to make it permanent, the highway commission decided to make a test, and this was done on the 22nd of January, just north of Fresno. A report of the test has been submitted by J. B Woodson, sixth division engineer, to A. B. Fletcher, chief engineer of highway construction.

The concrete base is being laid 4 inches thick, but much criticism has been directed against the highway commission, because it is claimed that this will not stand up under the traffic that it will be forced to bear. In addition to the test, attention is called to the fact that the state of New York has just let contracts for 4-inch concrete base, in portions where the traffic is many times as heavy as it is in California.

According to the report of the Fresno office on the test made on January 22, the concrete at that point was laid on December 19, and was therefore 35 days old when tested. On examining a piece of fractured pavement it was still moist for the full thickness as the weather at this time of the year is not conducive to rapid drying. The concrete would therefore probably have stood a greater strain if thoroughly dry

A trench two feet wide and four feet long was dug underneath the pavement 12 inches from the edge, leaving the concrete over this trench without any support

The rear wheel of a 10-ton road roller was then run over this concrete slab in many positions

When the wheel was run over the pavement 12 inches from the edge there was no effect on the concrete When it was run over the pavement 6 inches from the edge, there was still no effect

On the third test, the wheel was run over the concrete 6 inches from the edge and stopped in the center of that portion of the concrete directly over the trench, also without any effect.

When the edge of this wheel was run over the span, flush with the edge of the pavement, there was a slight spring.

The fifth test consisted of running the wheel flush with the edge of the pavement but also over a block of wood two inches thick, four inches wide and eight inches long placed 12 inches from the edge. There was a very noticeable spring as the wheel passed but no fracture of the pavement.

The test that finally fractured the concrete consisted of running the wheel over the span flush with the pavement and over the block that was placed on the span, six inches from the edge. The concrete failed to hold on this test.

Notwithstanding the fact that the concrete was still moist, the local division office reported that the results seemed to be all that could be desired as the concentration on the 4-inch block was almost 3½ tons, or about 1666 or two-thirds of a ton to the square inch, on the unsupported base.

The local division engineer made the following conclusions as to the durability of the road, in his report:

"In view of the fact that the concrete did not fracture when tested 12 inches from the unsupported edge with the above concentrated load, and will never be called upon to bear such a load under actual traffic conditions, I believe we are justified in stating that the 4-inch concrete base properly constructed as the above, will stand any reasonable loads."

Proposed Laws Threaten to Kill Cement Industry

The Sacramento Bee published the following:

Does powdered cement help catarrh? Does cement dust cause "stony lung" among sailors and longshoremen, and sometimes tuberculosis? Has it produced another occupational disease and is that why Germany insists on its shipment in dust-retaining packages?

Representatives of the Pacific Portland Cement Company, the Golden Gate Cement Company, the Cowell Portland Cement

Company, the Cowell Contra Costa Cement Company, the Santa Cruz Portland Cement Company, and the Standard Portland Cement Company were before the Senate Committee on Public Health and Quarantine recently to say "No" to all of the above questions save the first. To that one, one of the three physicians brought to the witness stand by the cement people said "yes," which caused a smile to come over the faces of two doctor-Senators of the Committee—Avey and Butler.

Beside the doctors and a brace of lawyers, the cement firms fighting Senate Bill 134, Bryant, introduced a half dozen "huskies"—meaning men who have worked in cement for long periods—as evidence that the employment is anything but unhealthy. The exhibits were admittedly convincing ones from the cement companies' standpoint.

The proponents of the bill—sailors and longshoremen who handle cement in the holds of vessels and on wharves—were represented by an attorney, who confessed that he had not had the foresight to bring along the human exhibits to accentuate his contention that cement dust has decidedly deleterious effects on the lungs of man when worked in for long periods. He promised to be better prepared at a second hearing, to be given the parties in March.

The Bryant bill provides that in any factory or other place where Portland cement is manufactured or handled provision shall be made for preventing the escape of cement dust into the atmosphere of any room where people are employed, and calls also for dust-proof walls and floors in the factory. Dust-proof containers are required for shipping purposes, and the loading of vessels may be stopped where such containers are not used.

The cement companies claim they will be forced to retire from business if the bill becomes a law, causing many thousands of dollars to be cut out of the Coast's revenues.

Good Roads

Good roads means transportation for products to and from market and consequently a direct increase in value of products, which is reflected in increased values upon the lands. They mean increased comfort and ease of travel, which is reflected in greater sociability and easier and more frequent communication in country life.

The Value of Proper Building of Highways

By William J. P. Simpson*

THE subject of Good Roads is one which should be viewed solely from the angle of Capital Invested vs. Value Returned—both in upholding the cause itself and in considering the most efficient type of surface. It is the purpose of this paper not to make a plea for good roads—nor to argue their economics—but to discuss the elements which enter into the problem of "getting your money's worth of road, whether at a cost of $3,000 or $2,000 per mile."

A dollar spent in the construction of roads earns the most interest when the combined sum of the depreciation, maintenance and repair charges and the interest on the first cost is a minimum, or, in other words, when the interest on any additional first cost is no longer saved by reduced depreciation, maintenance and repair charges. This applies with greatest force and without possible exception to the construction of grades, bridges, culverts, and to all features which cannot be altered later to meet more severe traffic conditions without a partial or entire loss of the original construction.

For example, consider a road project through a rolling country such as the Palouse valley in eastern Washington. With a certain amount of money available for construction and a specified mileage to cover, the question arises as to the distribution of funds among the items of grade, bridges and surfacing. The problem is always influenced to a great extent by local conditions, geographic and political as well as physical, but its proper solution cannot be laid down without strict adherance to the following fundamental principles:

1. Locate line and grades with respect to maximum future traffic conditions.

2. Establish grade line with full reference to future traffic conditions and with regard to effect of grade upon tractive resistance. Equalization of cut and fill quantities is a valuable but secondary consideration.

3. Build permanent bridges, culverts and openings—preferably concrete. If temporary construction must be resorted to, openings should be large enough, so that permanent structure to come later, may fit within

*Assistant engineer, State Highway Commission, Olympia, Washington

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4 Give utmost attention and care to construction of sub-grade. Use tile, telford or sub-base liberally when necessary, and remember that a well constructed sub-grade covered with a few inches of crushed rock can be traveled in comfort and safety, when an expensive surface has cut up and gone to pieces because of a poor foundation.

Only by strict attention to the foregoing principles, can the dollar invested in good roads earn the most interest and hold its full value. The investment will always stand and can be increased at any time by the addition of a brick or bitulithic surface—without sacrificing any of its original worth. As an example of the wastefulness of the opposite policy, or that of applying a hard surface to roads without accomplishing the grading, bridging, draining, etc., consistent with the expenditure and absolutely necessary to preserve and perpetuate the value of the improvement, consider the policy of New York State before the days of highway commissioners and good roads. The writer had the good fortune to be employed with the highway department of New York State directly after the $50,000,000 bond issue was authorized for good roads. In the contracts let for the improvement of the trunk highways, one of the most expensive and constantly recurring items of construction was the excavation of gravel, cemented and packed by years of travel, that had been hauled on the road in former years and placed on stretches which it was necessary to cut down in order to afford drainage or for some equally vital consideration. Other instances, where upon long stretches of costly gravel roads there were superimposed fills of from 2 to 10 feet in order to afford headroom to pass a stream or abolish a grade crossing. All these instances carry with them not only the total loss of original cost, but frequently the additional expense required to undo the original work; to excavate and haul away the gravel that had been cemented together by years of travel, at costs ranging from 60 cents to $1.00 per cubic yard.

So it behooves us to look:

First, to the location of the road, to satisfy ourselves that we are not investing our money on lines that in fifty years will be physically unable to carry our traffic.

Second, to the grade lines, so that at some future time our successors will not be called upon to undo to their cost our investment.

Third, to our road foundations, so that we may not be required to reconstruct an expensive pavement, because of settling, cracking, and resulting mud holes, washouts and complete failure. If the grades, line and foundation are right, even though the most rigid economy has to be practiced in the wearing surface, the community has profited at a higher rate than possible under any other procedure, and is in a position to surface with brick, bitulithic or any of the highest standards of pavements, without sacrificing any of its original investment.

With these conditions and considerations confronting the road builder, there is created a demand for a wearing surface that is inexpensive, permanent, and which can be used as a base course for any of the higher grade pavements, at any time, without any loss of original investment. To satisfy this demand the following specifications were formulated:

The macadam shall be laid in two courses, base, or No. 1 course, and wearing, or No. 2 course.

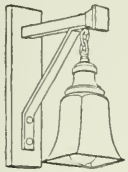
Base Course: The base course shall have a thickness of 6 inches, measured loose, and shall consist of a uniformly graded mixture of crushed rock which will pass through a 3-inch diameter ring and be retained on a 3/8-inch diameter ring. The fragments shall grade approximately as follows:

Pass Through	Retained on	Per Cent by Wt.
3 inch ring	1½ inch ring	60%
1½ inch ring	¾ inch ring	30%
¾ inch ring	⅜ inch ring	10%

"Crusher Run" material, with fragments up to ¾ inch eliminated, will be approved, if grading of same meets with above requirements.

The crushed rock in the base course shall be spread evenly over the sub-grade to the required depth. It shall then be thoroughly rolled with a roller weighing not less than 10 tons; rolling shall begin along the sides of the road, and proceed toward the center, taking care to preserve crown and dimensions of metaling, and shall be continued until the stone does not creep or weave ahead of the roller. If any depressions occur during or after rolling, they shall be filled with crushed rock of the same size as specified in base course, and rerolled until a firm, even surface is obtained. There shall then be spread uniformly from piles that have been placed alongside of the road, crushed rock screenings, varying from dust of fracture to ⅜ inch in greatest dimensions. Screenings shall grade at least 40 per cent of dust of fracture by weight. In no case shall the screenings for filler be dumped in a mass upon the crushed stone. The screenings shall be swept into the base course with rattan or steel brooms and the base rolled dry. This process shall be repeated and continued until no more screenings will go in dry. It shall then be sprinkled until saturated, the sprinkler being followed by the roller. More screenings shall then be added and the sweeping, sprinkling and rolling shall continue until a grout

(Concluded on Page 142)



Heating and Lighting

Plumbing and Electrical Work

Illumination of the Panama Pacific Exposition

THE lighting of the Panama Pacific Exposition in San Francisco in 1915 will, without doubt, surpass anything in lighting in the world's history. One of the features will be the fact that effects will be produced that have never been seen before. The problem of illuminating the Exposition is more than the problem of supplying simply the amount of light necessary for seeing purposes. This exposition must be illuminated in a manner that is unique, distinctive, and that will leave a strong impression of individuality upon the visitor. The architect demands that the beauties of his colonnades and towers be brought out as well under artificial light as under daylight. The sculptor is not satisfied with a silhouette at night; his figures must have perspective, form, life. The artist, also, would like to see his great mural paintings appear in their true colors. These, and many other problems, have been solved, and it remains only to work out the details before the Exposition opens in 1915.

Fortunately, the great advances made in illuminating materials and methods during the last few years enable the illuminating engineer to do things that but a short time ago were impossible. Much new material has been developed especially for this exposition, and the work of development is still going on under the direction of Mr. W. D. A. Ryan, director of the illuminating laboratories of the General Electric Company, and recently appointed chief of illumination for the Panama-Pacific International Exposition.

The walls back of the colonnades in some of the courts of the exposition buildings will be covered with large paintings. The method of lighting these paintings will be by lamps placed in the back of the columns. Three lamps will be placed in each column at heights of about 10, 20 and 30 feet. The illumination on the paintings can be absolutely controlled in intensity and distribution by changing the size of the units and the curvature of the reflecting surface; and by introducing colored bulbs, any color effect may be obtained. The light from these lamps is distributed on three principal planes: the ceiling, the wall and the floor. Viewed from the planes of the ceiling or wall they would be seen as direct units, and thus have in this direction the high efficiency characteristic of direct lighting units.

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One of the special features will be the introduction of jewels in the place of incandescent lamps so commonly used at previous expositions. The whole effect will be surmounted by a forty-eight electric scintillator—one for each State, which will be mounted off the main axis of the exposition, about five or six hundred yards out in the water. It will be placed on barges anchored in the bay, and will require sixty trained men to operate the lights. These will go through an evolution of color, forming Auroras and various effects in the sky and over the exposition, and will spread like a great lily, and will be seen in all the surrounding Bay cities and on clear nights will be visible in the sky for forty or fifty miles.

We have a great deal of fog in San Francisco and this will assist greatly in producing wonderful lighting effects.

The entire lighting plan will be new in every respect and will mark an epoch in illumination. The advance since the last big exposition in science and art of electric engineering and development of electric apparatus has been so great that it is now possible to produce effects with economy which would have been physically impossible five or six years ago. In other words the exposition is to be a magnificent picture by night, with the architectural splendor brought out to the best possible advantage in both form and color, maintaining the daylight perspective

Floor Heated Rooms

THE beauty, the durability and the sanitary qualifications of the mosaic or tile floor has led to its introduction in the American home with a somewhat rapid progress since the concrete form of building has been so extensively used. With the advent of floors of this type the question of floor heating has been raised, and leads to a study of the methods of heating buildings of the ancient days when tile floors were extensively used not only in homes, but in public buildings. In some of the Roman buildings there were piers of six inches square placed on about 24-inch centers, on which the corners of the flat tiles which were laid for a floor met. The piers were high enough to leave a space of from 16 to 20 inches beneath the tiles. Over these tiles a more attractive and smoother wearing surface was laid. In the colder seasons arrangements were made to send the smoke and gases from a fire through the flues under the floor formed by this type of construction. In this way the floor was kept at a temperature comfortable to the occupants of the room. This method of heating a room was the only one employed

In the recent construction of one of the college buildings of Cornell University, at Ithaca, N. Y., tile floors are used throughout, and to avoid complaint from a cold floor, steam pipes were laid in cases in the upper surface of the floor around the edge of the room. The pipes were then surrounded with concrete and covered with a decorated tile. It is pointed out that this eliminates the use of a radiator in the room. This experiment will be watched with some interest by architects and builders, and especially by men associated with the heating trade.

In the average American home, with its wooden floor, any heat that is lost from the heating apparatus, whether it is a warm-air furnace or a steam or hot water heater in the basement, is absorbed by the floor, adding substantially to its warmth, and goes a long way toward making the building comfortable for habitation. In such buildings the question of floor warming or floor heating is of no moment, but heating contractors having occasion to install their work in residences which have concrete floors are liable to meet a new experience, particularly where concrete or tile floors are extensively used.—Building Age.

"Press the Button" Age

The $100,000 model home proved one of the most popular features of the household show in the Chicago Coliseum. It contained every modern convenience. Press the button or operate a device equally as simple, and the bed in which you sleep is converted into a leather covered divan.

Press a button and a light is thrown upon the mirror of the dressing table from an electric boudoir lamp. Press another button and water for shaving or the bath is prepared instantly. Another movement of the hand and the curling iron is hot.

Press a button and the maid in the kitchenette answers your telephone orders for breakfast. She places on the dining room table the electric coffee percolator, the electric toaster, and the electric chafing dish for the eggs. In the kitchen the rolls are baked in an electric oven and the chops are broiled on an electric grill. A turn of a crank peels the potatoes or other vegetables.

While the family is at breakfast the maid is "straightening up" the sleeping rooms. The push of a button starts the electric vacuum cleaner, which removes the dust from the floors, the rugs, the draperies, the mattress, and even the walls of the room.

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Electricity in the Twentieth Century House

By Dr. Leonard Keene Hirshberg, A. B. M. A., M. D. (John Hopkins)

THOMAS EDISON has perfected a combination of gasoline engine, generator, and storage batteries by which, for a modest expense, every man can make his own electricity in his own cellar, utterly and for all time independent of the nearness or farness of the big electrical companies.

He can buy a farm in the Middle West or New England and can be as free of worries over lighting and heating as if he were a householder on Forty-second street, New York. He can erect a tent in the desert, if he is so minded, and still read himself to sleep at night under a convenient electrical chandelier, and shave himself the next morning with water heated on an electrical stove.

He can travel so far from the haunts of men that nothing remains to him of their memory, but he cannot, unless he deliberately wills it, find a darkness that Mr Edison has not given him means to overcome.

A practical demonstration of the truth of these things is now being made public by Mr. Edison at Llewellyn Park, West Orange, N. Y., in a house not far from his home.

There he has installed a complete equipment for the generation and storage of electricity, and has filled the house with electrical devices for proving the practicability of his little plant in the daily domestic routine

The first big fact to impress a visitor to the "marvel house," as they call it, in West Orange, is the amazing simplicity of the whole process.

Next in point of interest is its amazing economy; and last, but not least, is its amazing usefulness.

The full apparatus comes in nine sizes, ranging in price from $3800 to $3,300 and the name that Mr. Edison has given to the houses boasting his equipment is "Edison Twentieth Century Suburban Residences."

The actual machinery of the isolated lighting plant has been reduced to a minimum. There is a gasoline engine, fed by three tanks—one for gasoline, one for oil, and one for water. This much of the apparatus is kept out of doors, for the sake of peace and quiet, though the amount of racket made by the engine is really negligible, and cannot be heard at all fifty feet from the engine house.

The storage cells are put into the cellar, where they are recharged by the engine every second or third day.

The invariable injunction to the purchaser of a plant is to "start his engine and forget it." That is the sum total of his personal responsibility in the matter

It requires seven hours for the batteries to be charged. The engine is started, preferably in the morning, though the time is of no consequence.

There is an indicator on the storage cells which will tell how much power is in them, and when to stop the engine, though this is somewhat a superfluous formality, since it does not injure an Edison battery to overcharge it. The tank for gasoline contains only so much of each fluid as will precisely charge the batteries, and when these are used up, a resisting coil attached to the engine

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drops a magnetized bar, which automatically disconnects the dynamo from the battery.

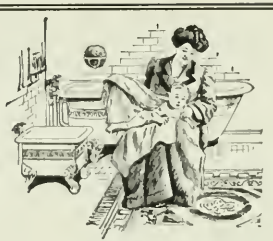
There is then nothing for the house holder to do but to go in and turn on his lights, play his phonograph, or look at his moving pictures as his time and fancy may direct.

All of which seems so simple that one might wonder how it took the great Thomas Edison seven years of hard work and fifty thousand separate experiments to perfect it were it not that the real crux of the story is only just about to be told. There is, back of the storage cells in the basement a series of serious research work which required the Biblical period of hard labor to culminate.

Half an eye will suffice to see that with the batteries newly charged, and the engine working at high speed, the voltage pressure on the lamps would burn them out. How to insure an even distribution of the current, which would be invariable whether the pressure was high or low, was the difficulty which delayed the arrival of the "twentieth century suburban residence," even after the battery had been perfected.

The automatic regulator is a nest of resisting wires, controlled by a small resisting coil similar to the one which cuts off the batteries from the engine. Through this, a perfect balance is established between the voltage of the batteries and the required voltage to operate the lamps. Speaking generally, it works very much like the retina of the eye, automatically controlling the flow of light and impeding its strength where that is too great for convenience or comfort

Once this paraphernalia is put in, the expense of running the engine is no greater than is the cost for electrical service supplied by any of the large companies. Thus, the man on the farm can give himself electricity in any amount, at no greater cost than the man in the city, once the initial expense of installing the plant is defrayed And the quality of light he gets is not in any way inferior The isolated plant gives a clear white light which does not flicker until the storage batteries are all exhausted, when its diminution is a warning to the owner that he must again "start his engine and forget it."



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The kitchen has a group of devices which materially assist the cook, the maid, and the laundress. There is a washing machine into which one puts the laundry, and from it, presently, after a button has been pushed, the garments come clean and wrung; there are electrical irons of all sizes and shapes, and there are the lightest and most convenient of vacuum cleaners. The dishes are washed in a specially designed machine.

In the dining room there are all sorts of pots and percolators for making coffee and tea. There is an electrical chafing dish, and a combination utensil which

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will broil steak, boil an egg, fry a piece of bacon and make toast all at the same moment and in the most compact space imaginable.

For bringing rapture to the heart of the struggling chorus girl there is an ingenious arrangement which, turned right side up, is an iron for pressing skirts and blouses; and turned upside down is an electrical stove for making the morning cup of coffee. A few more inventions like this and Theodore Kremer will have to draw his heroines from the suffering heiresses on Fifth avenue.

In the drawing room there is an Edison phonograph which, by means of condensite disc records and an indestructible diamond point needle, manages to rid its musical output of its scratching, metallic accompaniment. Upstairs, over the porte cochere, is an elaborate billiard room which has an Edison home kinetoscope for its special feature. This is, in effect, a moving picture machine on a small scale, and is fed with miniature films and throws its pictures on a four-by-five aluminum screen. These little negatives are so small that as many of them can be spaced on 75 feet of film as would require, if they were of average size, something more than 1,000 feet.

In the library there are electric fans for hot weather, and electric heaters for cold. And in imposing dignity at the library table there is an Edison dictating machine, into which paterfamilias dictates the answers to his morning mail.

The bedrooms are variously equipped with cooling and heating appliances, and all manner of first-aids to the toilette. There are electric foot-warmers for the beds, and, marvel of marvels, an electric blanket which will dull the pain of rheumatism or ease a toothache with equal facility. The bathroom has fixtures for heating your curling irons, heating your shaving water, and sterilizing your toothbrush.

And this elaborately appointed house can be picked up intact and set down in the middle of the alkali plains without suffering one single omission of its numberless conveniences. The soul of all this mechanism comes from the cellar just beneath it, and nothing less than a house divided against itself can ever mar its sleek perfection.—That is, forgetting to buy enough gasoline to fill the engines.

Wants Up-to-date Data

Duncan M. Robertson of 156 Fifth Avenue, New York, will appreciate receiving from the Coast trade manufacturers' data pertaining to materials, equipment and methods.

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By the Way

Some Industrial Information Worth the While

Hospital Improvements

Among the bills introduced at the present session of the legislature is one by Representative Lyman Farwell of Los Angeles, appropriating $500,000 for the establishment of a state hospital within fifty miles of Los Angeles.

The Committee on Hospitals and Asylums reported on numerous appropriation bills approved for action by the Ways and Means Committee as follows: $50,000 for nurses' home at Agnews; $58,000 for new ward at Stockton; $100,000 for four patients' cottages at Southern California; $10,000 for gas plant at Mendocino; $12,500 for reservoir at Mendocino; $75,000 for receiving building at Mendocino; seven bills totaling $97,800 at Napa; $60,000 for male working patients' cottage at Agnews; $60,000 for female working patients' cottage at Agnew; $20,000 for laundry at Southern California; $5000 for reservoir at Southern California; $10,000 for water stock for Southern California; $20,000 for dairy buildings at Stockton; $15,000 for heating system at Stockton; $15,000 for new floors at Stockton.

The Trus-Con Handbook

Of considerable value to those engaged on dampproofing, or finishing problems, is The Handbook, issued by the Trussed Concrete Steel Company, of Detroit, Michigan.

This work, now in its second edition, is a complete revision of the earlier publication and contains many important additions and improvements.

New specifications, treating special conditions, have been added together with numerous illustrations of late and important installations.

Trus-Con Waterproofing paste, concentrated, is a new feature in this edition. This paste, the makers state, is colloidal in its composition and has a record of positive results. It is recommended on account of its being extremely simple to use, being readily dissolved in the water used in mixing the mortar or concrete that it is desired to render waterproof.

The section devoted to the texture of cement floors is of particular interest

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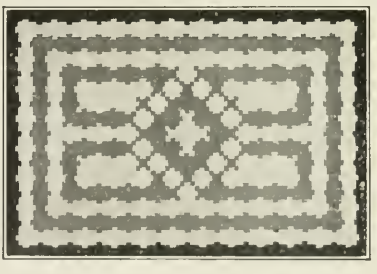

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It is illustrated with photo micrographs, showing various conditions of floors.

A description of and tables on Trus Con Ironite flooring is included together with tables of water pressure on concrete and mortar mixtures.

This handbook may be had by architects on request.

Successful Oil Burner and Appliances.

The production of crude oil from California soil, while a service of vast importance, required a controlling method, and the ingenuity of many minds was devoted to the production of some method whereby the consumption of this crude matter might be made serviceable to man and be the accepted fuel for hotels, cafes, hospitals, apartment houses, and private residences, etc. Many such inventions have been brought to the public attention, some possessing considerable merit and others little or none. Among the few that were brought to a successful point, and which have been operating in a highly satisfactory manner for the past several years, is that known as the T. P. Jarvis Crude Oil Burner and plant.

The device is now used in a great many of the hotels, cafes, apartments and business buildings on the coast. Among the recent Los Angeles installations are those of the State Exposition building, Yorke Hotel, Western Drug Company, Kaspar Cohn Hospital, Selegna Sol Apartments, and the Orpheum Theater, the latter of which is one of the largest and finest plants in the city. The company's main plant is in San Francisco with a Los Angeles branch at 719 California building.

To Reproduce Grand Canyon at World's Fair

A reproduction of the Grand Canyon of Arizona and the Pueblo Indian Village will be the Atchison, Topeka and Santa Fe Railroad's exhibit at the 1915 Universal Exposition. This will be a

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concession and an admission charge will be made to see this wonderful collection of exhibits, and one of the seven wonders of the world.

It is estimated that the concession will occupy ground space covering 300x700 feet and the railroad will expend in the neighborhood of $250,000 to install it.

Walter Burridge, the famous scenic artist has been engaged to reproduce the Grand Canyon. It will be shown in staff and canvass, with every device of the scenic painter brought into use.

It is planned to give the spectator the first glimpse of the artificial canyon from an observation platform. The rugged desert and its mighty chasm will open to view with much effect of well known paintings of the canyon which have been issued by the Santa Fe Railroad and are hung in the railroad offices and hotels all over the world.

The wonderful color effects to be seen in the Grand Canyon will be reproduced and this promises to be one of the great exhibits of the Exposition. Indian tribes, Indian villages, will include representatives of the Pueblo, San Domingo, Navajo, Zuni and Hopi tribes of Indians. They will present their dances and customs in native costume and this in itself will be one of the attractions of the exhibit.

A Handbook for Engineers

The American Steel & Wire Company, with branch offices in all the principal Coast cities, has recently issued a handbook and catalogue of concrete reinforcement. This is a substantial book of 150 pages, size 6x9½, bound in flexible cloth. Its contents are almost encyclopedic in their presentation of the subject of triangle mesh reinforcement for concrete, and the data furnished would appear to be the result of much careful study and actual practical experience.

The text is illustrated with many photographs, sections and diagrams of work tentative and constructive.

The price, as stated by the publishers, is $2.00. Architects, desiring to secure the work, will be able to do so by correspondence with the American Steel & Wire Company.

A New Red Press Brick

The first kilns of the new red pressbrick made by the Vallejo Brick & Tile Co., are now being drawn, and the samples distributed are meeting with much favor by the architects and contractors.

This brick is known as "Nu Face" comes "fat" in size with an even texture in several shades of red. These brick will, no doubt, be in big demand, judging from the quality and the price.

This company is also taking up the manufacture of a high-grade fire brick and known as "Perfection V."

The Vallejo Brick & Tile Co. now occupies large new offices in the Security Building, 343 Sansome Street, San Francisco. The new telephone number is Sutter 2877.

Steam Pipes in Concrete Floors

Heating a building by means of steam pipes embedded in the concrete floor has been successfully accomplished in the chassis testing building of the Moline Automobile Company, Moline, Ill. The structure is 120 feet long by 60 feet wide with door openings extending completely across the ends of the building. The workmen are obliged frequently to lie on the floor in making necessary repairs and adjustments and on this account, it was desired to keep the floor surface comfortably warm. To accomplish this, 1¼-in. steam pipes spaced 42 in. on centers were laid 2 inches below the surface of the 6-in floor slab. The concrete is reinforced locally against cracking due to the expansion of the steam pipes by corrugated, galvanized iron pipes enclosing the former. Below the floor slab, 8 in of cinder fill are placed as an insulating material. It is stated that with only five small metal radiators additional, it is possible to obtain a uniform temperature of 65 to 70 deg. Fahr throughout the building.

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Gypsum plaster in various forms, such as Keene's cement, has been largely used for interior work, but has proven unsatisfactory for out-door use through its inability to stand exposure to weather. Certain slag cements, and the "grappier" cement, made by grinding the residue of hydraulic lime manufacture, are nearly white in color, and have been considerably used in Europe, but are so far inferior to Portland cement, in strength and hardness, as to have given little satisfaction.

Experiments made by S. B. Newberry, V. P. and Gen. Mgr. of Sandusky Portland Cement Company, Sandusky, Ohio, have finally produced Medusa White Portland Cement of pure white color, and equal in strength and other qualities to the best gray Portland cement. This company has built a special factory for the manufacture of this product, and for the past four years has been shipping in large quantities, to the universal satisfaction of customers.

Medusa White cement is guaranteed to be a high testing Portland, passing standard specifications, and is the first true white Portland ever manufactured. It is shipped in duck sacks returnable, or in paper lined wooden barrels, of standard size for ordinary Portland cement.

Medusa White Portland cement will be found suitable for building ornamentation, such as steps, columns, doorways, window casings, cornice, panels and for stucco, statuary, tile, mosaic, stainless mortar for laying up Bedford limestone, sandstone or marble. For concrete building blocks Medusa White Portland can be used in conjunction with Medusa Waterproofing for facing or entire body of absolutely dampproof hollow concrete blocks, of pure white color or any desired tint. White limestone or crushed white marble and Medusa White Portland cement produces effects which give the appearance of solid blocks of white marble, and if surface is washed with dilute muriatic acid and then scrubbed with water, a texture is produced which rivals natural stone. Pure white floors, wainscoting, reliefs and stair-cases can be obtained by the use of Medusa White, while its use with white crushed marble for monuments, vaults, columns, urns, and plot borders in cemetery work, after washing off the finished product with dilute muriatic acid produces a sparkling effect rivaling that of the best white marble. It is unexcelled for fountains, seats, railings, walks and gateways for parks and grounds.

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The exterior of the rough walls of the California State Normal School, San Jose, Cal., are covered with a pebble dash of Medusa White Portland cement. This work was completed about a year ago and is said to be the largest reinforced concrete school building, in ground area, in the world. Because of its immense proportions and unusual exterior treatment it is attracting world wide attention.

Over 5,000 barrels of Medusa Waterproofed White Portland cement were used in the Woolworth Building, New York City, the highest office building in the world, while the United States Government has used Medusa in the Senate office building, National Museum, New York City post office and many other post offices and buildings.

Sawing Concrete

Have any of the carpenters ever cut a concrete wall with a saw, asks W. E. Hornbeck, in American Carpenter and Builder.

I recently got a wall 6 inches inside the property line by mistake in measurements; and as the property was quite valuable, the owner wanted that 6 inches. This wall was 12 inches wide at the bottom, 8 inches wide at the top, 18 inches high, 48 feet long, and had been poured two days and two nights. We had an old cross-cut saw about 5 feet long, and I suggested using it to cut the wall in two.

Everybody laughed, but I got the saw and started. I cut a slot about an inch and a half wide and when we would strike a pebble too large for the saw to knock out, I took a cold chisel and hammer to it. We cut the wall in 12-foot lengths and as we had plenty of laborers in the lumber yard near by, I got eight of them to sit on the ground side by side inside of the wall with their feet against it. Then, by pushing against it with their feet and pulling the top to them and letting it back again in a kind of rocking motion we easily moved it out to the line.

We accomplished this work at a cost of about three dollars, whereas, if we had destroyed the wall, set forms and poured a new wall, the cost would have been near twenty dollars.

After the wall was in line and the joints repaired, everyone agreed it was a good job and the laugh was on the other side. Of course the teeth in that saw were slightly damaged, but we could afford to throw the saw away considering the amount we saved.

I did not like the noise that the saw made; it sounded too much like running a saw on a nail, but I said nothing and sawed concrete.

Hall of Knights of Columbus Building, San Francisco. Smith O'Brien, Architect.

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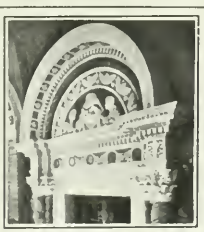

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The Value of Proper Building of Highways

(Continued from page 118)

has been formed of the screenings and water that shall form a wave before the wheels of the roller. The road shall be puddled as many times as is necessary to secure satisfactory results.

After the base has dried out all excess screenings shall be swept off, leaving the surface of the base course of a mosaic appearance. This requirement is important and will be rigidly enforced.

Wearing Course. There shall then be spread uniformly over the base a coat of asphalt which has previously been heated to a temperature of 250 degrees F., in proportion of about ¾ gallon to the square yard. Penetration of asphalt shall be specified by highway commissioner between ranges of 40 degrees and 80 degrees, District of Columbia standard.

After the asphalt has been applied, crushed rock screenings varying in size from dust to ⅜ inch shall be uniformly spread in sufficient quantity to absorb the free asphalt without leaving any excess screenings. The roadway shall then be rolled, and additional screenings spread to absorb any asphalt which may come to the surface. This operation shall be repeated until no more asphalt comes to the surface upon continuous rolling.

The hard surface itself, which we will call bituminated macadam, is essentially a one-course water-bound macadam with the voids reduced as low as consistent with the additional expense involved. To protect it from the abrasive action of high speed vehicles a coat of asphalt having a penetration suitable to local conditions is applied, and rock screenings spread over and rolled into it to give it body.

Aside from its great or less value as a hard surface pavement, a course of well filled and bound crushed rock, in ordinary soils, affords a highly satisfactory foundation for any pavement. It has been so used successfully upon several miles of streets in Portland, Oregon, under bitulithic, and extensively in Ohio country roads under brick, wherein the unstability of the underlying subsoil did not require concrete.

Theoretically, these specifications should give a pavement that, under ordinary country road traffic, should compare favorably with any bituminous macadam that does not infringe upon the Warren Brothers' patents. The advantages of the water-bound macadam, with its exception of the lower tractive resistance, are preserved, and the method employed to prevent its raveling under high-speed traffic is effective and inexpensive. It lends itself easily to maintenance, and with the wearing surface renewed every two years should last indefinitely. The efficiency of bond between the asphalt and crushed rock is open to question, but the conditions are no worse than those encountered in using the bituminous coat upon concrete; in fact, the opportunity for a mechanical bond is better, and the experiment is far less expensive.

New Building Estimator

Arthur's "New Building Estimator" is the most popular work on calculating the cost of building construction now on the market. It has earned its place through its thorough treatment of the subject which you will note is covered both in detail and approximately. The value of this double arrangement lies in its giving the appraiser or estimator—who has to give quick and only approximate figures—the information desired, while the detail section provides figures covering the quantity of material and the labor required in such carefully checked form that the estimator may figure his costs almost to the penny.

The tenth and eleventh editions were printed at the same time, and the former was published on January 4th last. The value placed upon the work by the trade

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Office of Pacific Mail Steamship Company Bankers Investment Building, San Francisco, showing Hydraulic Tile Floor, Manufactured by Henry Gervais. Fred'k H. Meyer, Architect

is evidenced by the fact that the tenth edition is entirely exhausted.

In revising the present work Mr. Arthur went over every page and corrected all prices and typographical errors in the old work. He then added about 250 pages of new matter, covering reinforced concrete and all the chapters listed thereafter in the table of contents. You will note that this increased the size of the book about 50 per cent, making a work of 744 pages. The price is but $3.00.

Another valuable book published by the David Williams Company, 239 West 39th Street, New York, is Joslin's "Handy Estimate Blank," which should interest every one who is called upon to make up estimates. The volume covers practically everything required in the modern job, ranging from the Cottage to the small-sized Apartment House, and spaces have been left for figuring the labor on each item or section of work and for adding any extras. Furthermore, the author has provided special pages for listing of sub-contracts with the profit on the job put in its proper place at the end of the estimate. These blanks sell at 25c each, or $2.50 per dozen, postpaid.

Million Dollar Mansions for Burlingame

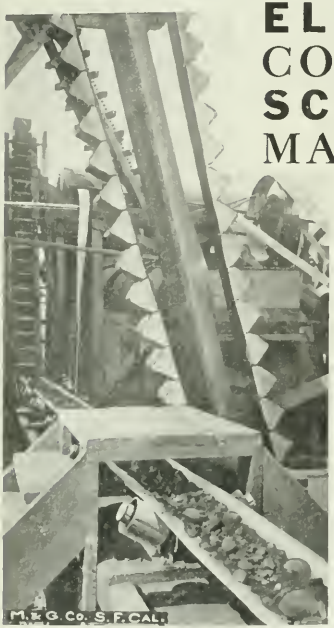
Architects Willis Polk & Company of San Francisco, have completed the drawings for the palatial Italian villa to be built at "Uplands," Burlingame, Cal., for Templeton Crocker, at a cost, including landscape effects and furnishings of $1,000,000.

Polk is now busy on the plans for the beautiful country home of Mrs. Frank Carolan, which will also be built in the exclusive Burlingame district. Collaborating with Polk is the famous French architect and landscape artist, Achille Duchene, who, after a recent visit to California, spoke of his plans and observations to the New York press as follows:

"While out there I decided upon the site for the house, and the various locations, and I am collaborating with Mr. Polk, the San Francisco architect. Our idea at present is for something of not exactly French style, but a good adaptation. There will have to be an especial creation, adapted to the situation, perhaps a suggestion of Italian, on good French lines."

(Continued on page 149)

TRANSMISSION



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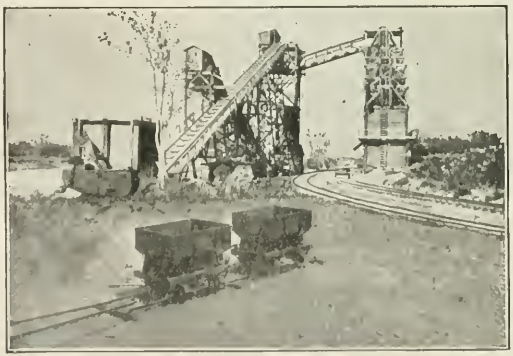

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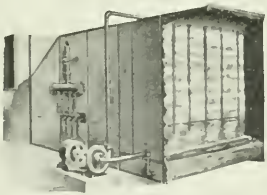

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The first annual "Get-Together" dinner of the department managers of Parrott & Co., was held December 28th and was a splendid success. A fine menu was enjoyed, following which Mr. A. B. Huie, president of the Parrott Company, made some happy remarks as toastmaster. Mr. R. H. Menzes gave a brief history of the company, followed by a talk on organization by Mr. L. E. Boyle. Others who spoke were F. F. Brown on "Co-operation from the Standpoint of a Branch Office;" H. L. Schermerhorn, "Versatility, Fashion, Poetry and Business;" E. J. Benjamin, "Sugar—Past, Present and Future;" R. Adams, "Successful Lines—How Handled;" J. A Clark, "Sound Business (Puget);" F. M. Ball, "Our Selling Organization;" C. F. Nougues, "How to Get the Business;" R. L. Kirk, "Clouds and Sunshine of a Broker;" C. F. Holcomb, "The Accountant—His Troubles and the Remedy;" B Hilbing, "Ships at Sea and in Port;" F Plaw, I. J. Theobald, E. L. Barry, T. S. F. Nöldeke, G. G Fadden, A. Bolton, and F. W. Spencer.

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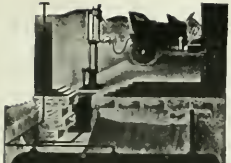

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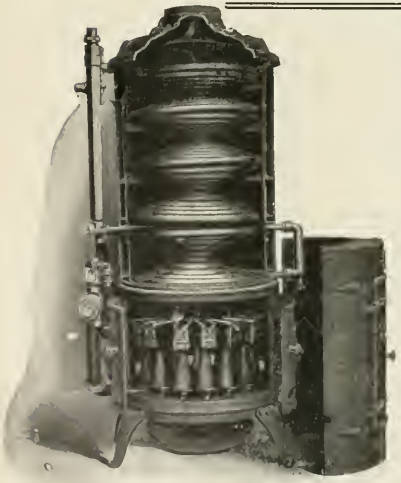

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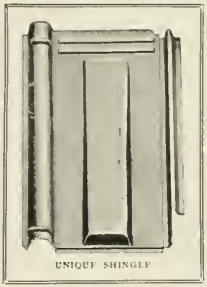
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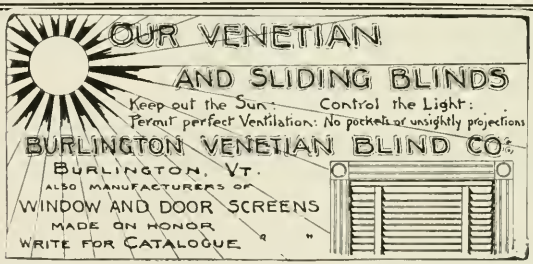

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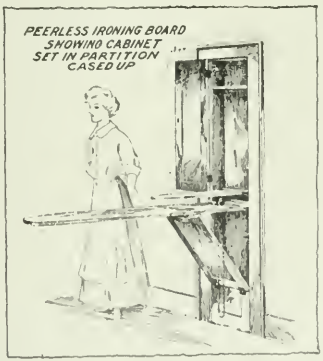

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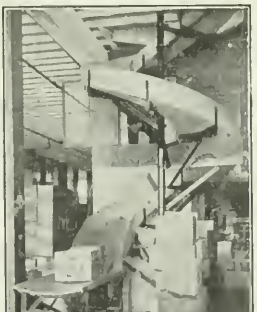

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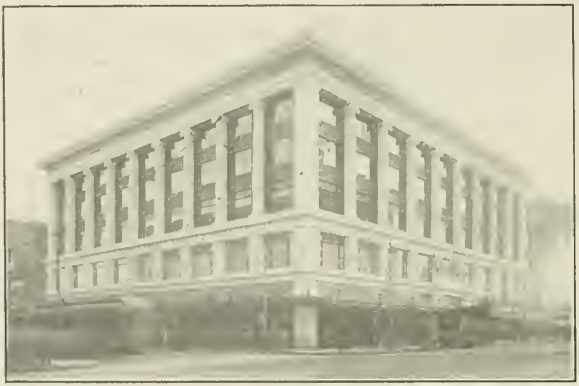

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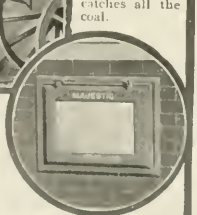

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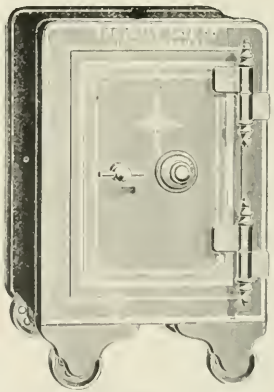

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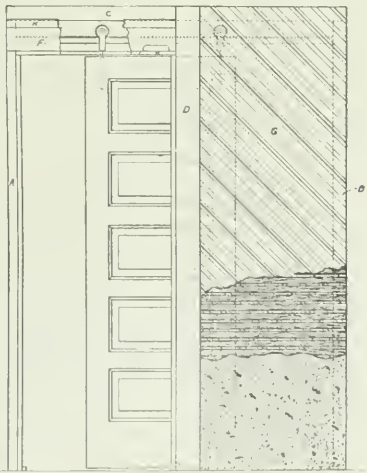

Fig 4

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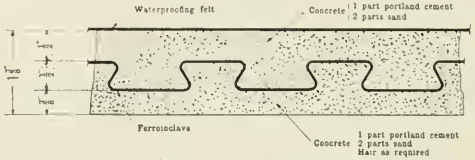

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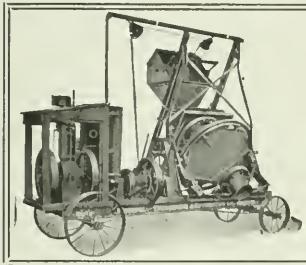

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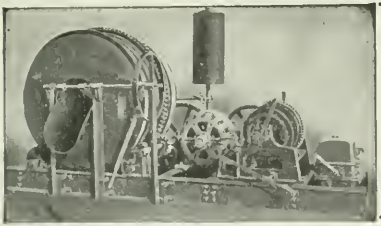

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IT HAS A RECORD OF FOURTEEN YEARS' USE WITHOUT A FAILURE

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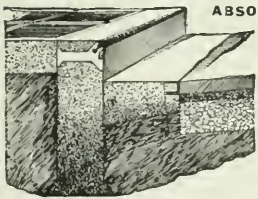

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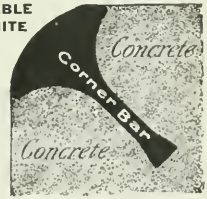

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Mounted on channel iron truck, it is a complete power driven outfit for use of builders in pumping water from footings, cellars, coffer-dams or on public works where it is necessary to raise large quantities of water.

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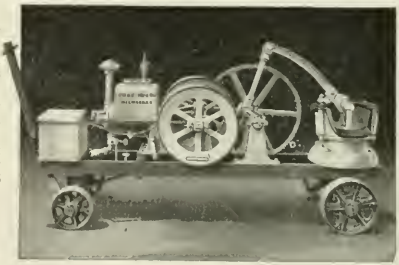
The capacity is 3000 gallons per hour with 3-inch suction pump and 6000 gallons per hour with the 4-inch suction pump.

This outfit does the work of from 4 to 8 men, *Never* SLEEPS AND ALWAYS ON THE JOB.



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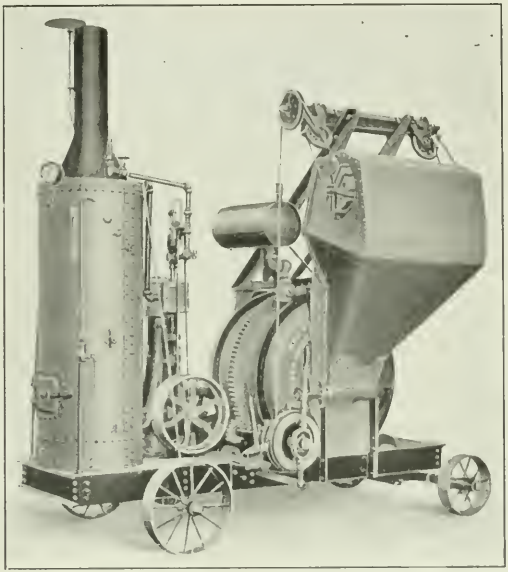

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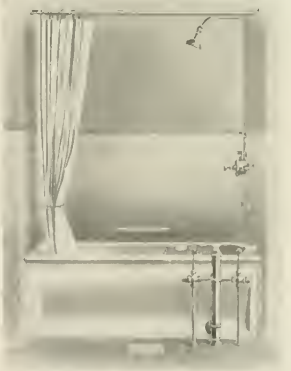

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Width of Rim. . . . . 3"

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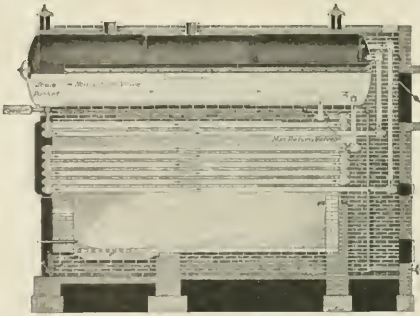

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March, 1913

Vol. XXXII. No. 2

Published by The Architect and Engineer Co.

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Ceresit Waterproofing is a paste which when mixed in the gauging water renders concrete and cement mortar impermeable to water and even dampness.

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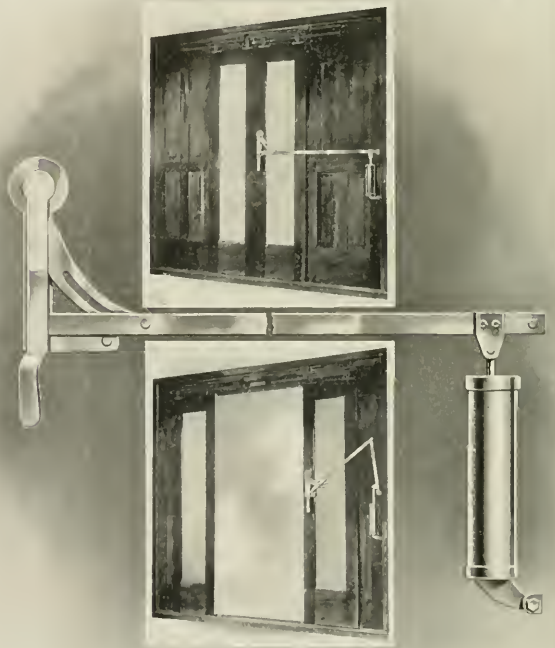

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Doors when closed are securely locked.

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CONCRETE and ROAD WORK

GRANT GRAVEL CO.

Clean Fresh Water Gravel from Pleasanton and Healdsburg

Williams Building

3d and Mission Sts. - San Francisco

TELEPHONE DOUGLAS 3078

A few jobs of our material: Temple, City Hall, Masonic Temple, Stanford Apartments, 1068 Post Street, Oakland St. Luke's Hospital, Lowell High School and hundreds of other first-class buildings. Accepted in all City, State, and U. S. Government work.

ROOFING GRAVEL

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BUSWELL'S Steel and Concrete Paints

A CALIFORNIA PRODUCT HAS MET ALL TESTS ASK US

Works and General Offices - - OAKLAND, CAL.

ARCHITECTS' SPECIFICATION INDEX *Continued*

CEMENT—Continued
The Building Material Co., "Medusa White Portland" ....583 Monadnock Bldg., S. F.

CEMENT EXTERIOR WATERPROOF COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See distributing Agents on page 153.] Boyd & Moore.....356 Market St., S. F.
Petrifax Cement Coating, sold in San Francisco by Sherman Kimball, 503 Market St.
Biturine Co. of America.
24 California St., S. F.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. See advertisement for Coast agencies.
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT EXTERIOR FINISH
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 153.]
Concrewaltum Paint, manufactured by Gobeen Company, Canton, O. Coast branches, San Francisco, Portland and Seattle.
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Buswell's Steel and Concrete Paints
Oakland, Cal.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing Agents on page 153.]
Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT GUN
Lilley & Thurston Co., distributors for Northern California .....Rialto Bldg., S. F.

CEMENT TESTS AND CHEMICAL ENGINEERS
Smith, Emery & Co....651 Howard St., S. F.
Robert W. Hunt & Co.,
418 Montgomery St., S. F.

CHURCH INTERIORS
Burlingame Cabinet Works,
509-511 Sixth Street, San Francisco.
Fink & Schindler.....218 13th St., S. F.

COAL CHUTES
Majestic Furnace Company, Sherman Kimball & Co., Inc....507 Mission St., S. F.

CLOCKS—TOWER AND STREET
E. Howard Clock Company.....New York
For Pacific Coast agents see advertisement.

COOLERS AND HUMIDIFYERS
California Air Purifying Co.,
Monadnock Bldg.

COLD STORAGE INSULATION
"Hydrex" Felt & Compound, manufactured by Hydrex Felt & Engineering Co., N. Y.; sold by Rolph, Mills & Co.,
Hansford Bldg., S. F.
Neponset Waterdyke Felt and Compound manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co.,
320 California St., S. F.

COMPOSITION FLOORING
Artolith Mfg. Company, 149 Turk St., S. F.
Fibrestone & Roofing Co.,
704 Market St., S. F.
H. M. Parry & Co., 145 Montgomery St., S. F.
Indestructible Floor Tiling Co., 251 Kearny St., S. F.
Lithoid Products Co., Merchants Exchange Bldg., S. F.

CONCRETE CONSTRUCTION
"Mushroom" System of Concrete Flat Slab Construction Industrial Engineering Co.,
Clunie Bldg., S. F.
H. M. Scarrett, Turk and Jones Streets, Los Angeles
Foster Vogt Co....722 Hearst Bldg., S. F.
Petersen, H. L. .....62 Post St., S. F.
Ransome Concrete Company,
Oakland and Sacramento
J. M. White Company....101 Post St., S. F.
F. J. R. Rickon.....1859 Geary St., S. F.
F. J. Klenck.....Monadnock Bldg., S. F.

CONCRETE MIXERS
Chicago Improved Cube Mixer. Pacific Coast Offices, 338 Brannan St., S. F., and F. T. Crowe & Co.....Portland and Seattle.
Foote Mixers sold by Edw. R. Bacon,
40 Natoma St., S. F.
Ransome Mixers, sold by Norman B. Livermore & Co....Metropolis Bank Bldg., S. F.
Planetary Mixers, manufactured by Enterprise Foundry Co...200 Second St., S. F.
Wallace Concrete Machinery Co.,
Monadnock Bldg., S. F.
Marsh-Capron Mixers, sold by Langford, Bacon & Myers, Rialto Bldg., S. F.

CONCRETE PILES
Harron, Rickard & McCone,
Townsend Street, San Francisco.

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

Specify... For Plastering

HOLMES DIAMOND SANTA CRUZ LIME

PHONE KEARNY 2220 The Holmes Lime Co.

Guaranteed Against Pitting or Popping Monadnock Bldg., San Francisco

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle

Clinton Welded Reinforcing System, L. A. Norris, Monadnock Bldg., S. F.

"Kahn System," see advertisement on page 152 this issue.

International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., S. F.

Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.

Triangle Mesh Fabric. Sales Agents, The Lilley & Thurston Co....Rialto Bldg., S. F.

Twisted Bars, sold by Woods & Huddart, 444 Market St., S. F.

CONCRETE SURFACING

"Biturine," sold by Biturine Co. of America, 24 California St., S. F.

Liquid Stone Paint Co., Hearst Bldg., S. F.

Buswell's Steel and Concrete Paints, Oakland, Cal.

"Conereta," sold by W. P. Fuller & Co., S. F.

Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

Moller & Schumann...1023 Mission St., S. F.

CONTRACTORS' EQUIPMENT

C. H. & E. Mfg. Co., Inc., Milwaukee, Wis., represented by Parrott & Co., S. F.; Beebe Co., Portland, A. F. George, Los Angeles, E. P. Jamison, Seattle.

CONTRACTORS, GENERAL

Commary-Peterson Co., Inc., 46 Kearny St., S. F.

F. J. Klenck.....Sharon Bldg., S. F.

F. O. Engstrum Co., East Fifth and Seaton Sts., Los Angeles.

Foster, Vogt Co.....722 Hearst Bldg., S. F.

Geo. H. Steffels & Co., 830 Pacific Bldg., S. F.

Geo. W. Boxton.....Hearst Bldg., S. F.

Hansen, F. L., 525 Monadnock Bldg., S. F.

Holm & Son.....Foxcroft Bldg., S. F.

Harvey A. Klyce.....Monadnock Bldg., S. F.

McLaren & Peterson.....Sharon Bldg., S. F.

C. P. Moore Building Co., Sharon Bldg., S. F.

Northern Construction Co., Mills Bldg., S. F.

Huginin Co., Inc., 804 Humboldt Bank Bldg., S. F.

Ransome Concrete Co., 1218 Broadway, Oakland

F. J. Rickon, C. E., 1859 Geary St., S. F.

Robert Trost, 26th and Howard Sts., S. F.

Scarrett, H. M., Jones and Turk Sts., S. F.

Williams Bros. & Henderson, Holbrook Bldg., S. F.

Burt T. Ousley.....311 Sharon Bldg., S. F.

Patrick-Nelson Company, 2025 Addison St., Berkeley, Cal.

Ward & Goodwin.....Sharon Bldg., S. F.

CORNER BEAD

"Prescott," sold by Boyd & Moore, 356 Market St., S. F.

Union Metal Corner Company, 144 Pearl St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK

Grant Gravel Co., ...Williams Bldg., S. F.

Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.

Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., S. F.

CORK TILING

Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. Pacific Coast office, Sharon Building, S. F., G. H. Freear, Mgr.

DAMP PROOFING COMPOUND

Biturine Co. of America, 24 California St., S. F.

Concrewaltum Paint, made by Goheen Mfg. Co., Canton, O., sold by Sherman, Kimball & Co., Inc., S. F., A. J. Capron, Portland, and S. W. R. Dalby, Seattle, Wash.

Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

Lithoid Product Company, Merchants Exchange Bldg., S. F.

Trus-Con Dampproofing. See advertisement of Trussed Concrete Steel Company for Coast agencies.

"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....34 First St., S. F.

Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.

Liquid Stone Paint Co., Phelan Bldg., S. F.

DISAPPEARING IRONING BOARDS

F. G. Cox.....933 Phelan Bldg., S. F.

DOOR HANGERS

Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.

Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works

Richards-Wilcox Mfg. Co.....Aurora, Ill.

Allith-Prouty Co., Danville Ill., 693 Mission St., S. F., and 412 E. 3rd St., Los Angeles

DOORS—DISAPPEARING

Pacific Tank & Pipe Co..231 Berry St., S. F.

DOORS AND SHUTTERS

Kinnear Steel Rolling Doors and Shutters, Lilley & Thurston Co., Rialto Bldg., S. F.

DRAWING INSTRUMENTS

Kieffel & Esser Company, Second Street, near Market, S. F.

DUMB WAITERS

Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.

Wells & Spencer Machine Company, 173 Beale St., S. F.

CALIFORNIA MARBLE

Seven Different Grades—Superior Finish—Moderate Price

Used in the New San Francisco Hall of Justice, Merchants Exchange Building Alaska Commercial Building, and others.

COLUMBIA MARBLE COMPANY

268 MARKET STREET, Rooms 201-202 SAN FRANCISCO, CAL.

"FIBRESTONE"

SANITARY FLOORING, WAINSCOT AND BASE. Laid Exclusively by
FIBRESTONE & ROOFING CO., 704 Market St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX *Continued*

ELECTRICAL CONTRACTORS
American Electrical Engineering Co.
435 Golden Gate Ave., S. F.
Butte Engineering Co., 683 Howard St., S. F.
Central Electric Co., 185 Stevenson St., S. F.
Garden City Electrical Co.....San Jose, Cal.
Ino. G. Sutton Co.....243 Minna St., S. F.
Pacific Fire Extinguisher Company.
507 Montgomery St., S. F.

ELECTRIC AND GAS APPLIANCES
American Agencies, Ltd.,
ELEVATORS 501 Market St., S. F.
Otis Elevator Company.
Stockton and North Point, S. F.
Van Emon Elevator Co., 54 Natoma St., S. F.
Wells & Spencer Machine Co.,
173 Beale St., S. F.

ELEVATOR DOORS
Variety Mfg. Co., Chicago C. Jorgensen & Co., Pacific Coast Distributors, 356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co.,
593 Market St., S. F.

ENGINEERS
F. J. Amweg.....700 Marston Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.
J. C. Hurley..... 12 Geary Street, S. F.
Hunter & Hudson.....Sharon Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co.,
593 Market St., S. F.

FAUCETS
Glauber Brass Mfg. Co.

FIRE DOOR HARDWARE
Kortick Falls Mfg. Co., 327 First St., S. F.
Allith-Prouty Co., Coast agencies, 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

FIRE ESCAPES
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374. Home, 13435. 370-84 Tenth St., S. F.
H. Johns-Manville Company, Branches in all Principal Coast Cities.

FIRE EXTINGUISHERS
Pacific Fire Extinguisher Co.,
507 Montgomery St., S. F.

FIREPLACE DAMPER
Head, Throat and Damper for open fireplaces, Colonial Fireplace Co., Chicago.
(See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
Gladding, McBean & Company,
Crocker Bldg., S. F.
Los Angeles Pressed Brick Co.
Frost Bldg., L. A.
Roebling Construction Co., Crocker Bldg., S. F.
"Bestwall," manufactured by California Bestwall Co., Lilley & Thurston Co., distributors, Rialto Bldg., S. F.
Collins Metal Lath and Steel Studding, sold by Parrott & Co., S. F. and Los Angeles

FIRE-PROOF PAINT
Liquid Stone Paint Co., Phelan Bldg., S. F.

FIREPROOF PARTITIONS
Rabbitt Partition Co., 34 Ellis St., S. F.

FIXTURES—BANK, OFFICE, STORE, ETC.
Burlingame Cabinet Works.
509-511 Sixth Street, San Francisco
A. J. Forbes & Son..1530 Filbert St., S. F.
Fink & Schindler.....218 13th St., S. F.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.

FLOOR VARNISH
Bass-Hueter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
R. N. Nason & Co....151 Potrero Ave., S. F.
Standard Varnish Works,
Chicago, New York and S. F.
Moller & Schumann Co.,
1022 Mission St., S. F.

FLOORS—CORK
Nonpariel Cork Tiling, David E. Kennedy, Inc., N. Y. Distributor for the Pacific Coast, G. H. Freear, Sharon Building, S. F.

FLOORING—MAGNESITE
Fibrestone & Roofing Co.,
704 Market St., S. F.
Mallott, Peterson & Adams,
682 Monadnock Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit.
Bowser & Co. .....612 Howard St., S. F.

GARBAGE CHUTE
Bill & Jacobsen.....524 Pine St., S. F.

GLASS AND GLAZING
W. P. Fuller & Co.,
San Francisco, Los Angeles and Portland.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co.....153 Berry St., S. F.
California Building Material Co.,
Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
Niles Sand, Rock & Gravel Co.,
Mutual Bank Bldg., S. F.

HARDWARE
A. W. Pike.....711 Mission St., S. F.
Pacific Hardware & Steel Co., S. F. and L. A.
Richards-Wilcox Mfg. Co. .....Aurora, Ill.
Russwin Hardware, Joost Bros., S. F.
Window Adjusters, mfrd. by The Casement Co., 175 State St., North Chicago, Ill.
Allith-Prouty Co., 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

HARDWOOD FLOORING
Strable Mfg. Co.....Oakland, Cal.
New York Hardwood Floor Co.,
784 O'Farrell St., S. F.
Parrott & Co.....370 California St., S. F.
White Bros. Cor. Fifth and Brannan Sts., S. F.
Hardwood Interior Co., 554 Bryant St., S. F.

WATER HEATERS - PUMPS
BOILERS

F. HARVEY SEARIGHT
SHREVE BLDG. SAN FRANCISCO

WELLS AND SPENCER MACHINE CO.
F. M. SPENCER, SUCCESSOR
173-177 BEALE ST., SAN FRANCISCO
REPRESENTING
WESTERN ELEVATOR COMPANY
REPAIRS, INSPECTIONS AND DUMB WAITERS
TELEPHONES: KEARNY 664 HOME J 1124

ARCHITECTS' SPECIFICATION INDEX—*Continued*

HARDWOOD LUMBER
Parrott & Co.....320 California St., S. F.
Strable Mfg. Co.,
First St., betw. Washington & Clay, Oakland.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HEATERS—AUTOMATIC
Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co. .....667 Mission St., S. F.

HEATING ENGINEERS
General Engineering Co.,
231-3-5 Natoma St., S. F.

HEATING EQUIPMENT—VACUUM, ETC.
C. A. Dunham Co., Marshalltown, Iowa, Western Division Office,
Monadnock Bldg., S. F.

HEATING AND VENTILATING
Atlas Heating & Ventilating Co.,
Fourth and Freelon Sts., San Francisco.
Fess System Co.....220 Natoma St., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
General Engineering Company,
281 Natoma St., S. F.
Hoffman & Meusser,
1129-1131 Howard St., San Francisco.
J. C. Hurley..... 12 Geary Street, S. F.
S. T. Johnson Co.....1334 Mission St., S. F.
Mangrum & Otter, Inc., 507 Mission St., S. F.
Jno. G. Sutton Co....243 Minna St., S. F.
Pacific Blower & Heating Co.,
Monadnock Bldg., S. F.
Pacific Fire Extinguisher Company,
507 Montgomery St., S. F.
Petersen-James Co....710 Larkin St., S. F.

HOTELS
The Angelus, Loomis Bros.....Los Angeles

ILLUMINATION
Great Western Power Company,
233 Post St., S. F.

INGOT IRON
American Rolling Mill Co., Middleton, Ohio.
California Corrugated Culvert Co.,
5th and Parker Sts., West Berkeley.

INLAID FLOORS
Hardwood Interior Co., 554 Bryant St., S. F.

INTERIOR WOODWORK
New York Hardwood Floor Co.,
784 O'Farrell St., S. F.

INTERIOR WALL FINISH
Satina mfg'd. by C. H. Brown Paint Co.,
F. A. Frisius, 341 Lincoln ave., Alameda, California.

INSPECTIONS AND TESTS
Robert W. Hunt & Co.,
418 Montgomery St., S. F.
Smith, Emery & Co. Inc.,
651 Howard St., S. F.

INSULATING MATERIALS
Armstrong Cork Co..... Pittsburg, Pa.

INTERIOR DECORATING
Allith Prouty Co.....693 Mission St., S. F.
The Tozer Company, 228 Grant Ave., S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.
Kortick-Falls Mfg. Co.,
327-343 First St., S. F.

LIME
Holmes Lime Company,
Monadnock Bldg., S. F.
Shasta Lime Products Company,
1550 Bryant St., S. F.

LIGHTING FIXTURES
Adams, Hollopeter & Mallett,
353 Sutter St., San Francisco
Bauer Fixture Co.....49-55 Jones St., S. F.

LIGHT, HEAT AND POWER
Pacific Gas & Elec. Co..445 Sutter St., S. F.
Great Western Power Co.,
233 Post Street, San Francisco

LUMBER
Sunset Lumber So.....Oakland, Cal.
Santa Fe Lumber Co.,
Seventeenth and De Haro Sts., S. F.

MANTELS
Mangrum & Otter ....561 Mission St., S. F.
Thos. F. Rigney, ...9 City Hall Ave., S. F.

MARBLE
Columbia Marble Co...268 Market St., S. F.

MARBLE CARVING
Florentine Art Studio...932 Vallejo St., S. F.

METAL AND STEEL LATH
Baker & Hamilton, 433 Brannan St., S. F.
Roebling Construction Co.,
San Francisco and Los Angeles
L. A. Norris & Co., Monadnock Bldg., S. F.

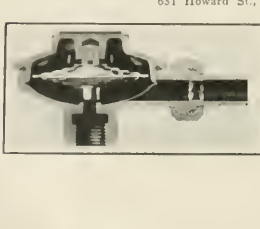
METAL CEILINGS
Berger Mnfg. Co....1120 Mission St., S. F.
Ames-Irwin Co., Inc.,
Eighth and Irwin Sts., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, with M. G. West Co., 353 Market St., S. F.

METAL FURNITURE
The Keyless Lock Co.....Indianapolis, Ind.
Van Dorn Iron Works Co.....Cleveland, O.
M. G. West Co.....353 Market St., S. F.

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent..., Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

MIXERS
Enterprise Foundry Co., 200 2d St., S. F.



The Dunham Radiator Trap
Makes Good on Every Essential Point, Send for Catalog
Western Division Office
C. A. DUNHAM CO. - 602-18 Monadnock Building
SAN FRANCISCO PHONE SUTTER 2548

ARCHITECTS' SPECIFICATION INDEX *Continued*

OIL BURNERS
S. T. Johnson Co...1334 Mission St., S. F.
Fess System Co.....220 Natoma St., S. F.
T. P. Jarvis Crude Oil Burner Co.,
273 Connecticut St., S. F.
Blaisdell Machinery Co.,507 Mission St., S. F.
Simplex Crude Oil Burners. Furnaces and Ranges, manufactured by American Heat & Power Co., 607 First National Bank Bldg., San Francisco

OPERA CHAIRS
C. F. Weber & Co....365 Market St., S. F.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal & Wire Co.,
349 Seventh St., S. F.
J. G. Braun.....Chicago and New York
Ralston Iron Works,
20th and Indiana Sts., S. F.
Standard Iron Works,
235-39 Shirley St., S. F.
Golden Gate Structural & Ornamental Iron Works .....1479 Mission St., S. F.
C. J. Hillard Company, Inc.,
19th and Minnesota Sts., S. F.
Shreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Sartorius Company..15th and Utah Sts., S. F.
West Coast Wire & Iron Works,
861-863 Howard St., S. F.

OVENS—BREAD AND PASTRY
New Era Oven Co., 2560 Sutter St., S. F.

PAINT FOR STEEL STRUCTURES
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Buswell's Steel and Concrete Paints,
Oakland, Cal.
Carbonizing Coating, made by Gobeen Mfg. Co., Canton, O. See advertisement for Coast distributors.
Trus-Con Bar-Ox, Trussed Concrete Steel Co. See adv. for Coast agencies.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

PAINT FOR CEMENT
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Duresco Washable Water Paint & Waterproofing Liquid, sold by Carbolineum Wood Preserving Co., 311 California St., S. F.
Trus-Con Stone Tex., Trussed Concrete Steel Co. See advertisement for Coast agencies.
Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Gobeen Mfrg. Co., ...Canton, O.
See advertisement for Coast distributors

PAINTS, OILS, ETC.
Bass-Hueter Paint Company,
Mission, near Fourth St., S. F.
R. N. Nason Company.....San Francisco
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Gobeen Mfrg. Co., ...Canton, O.
See advertisement for Coast distributors
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co.,
S. F. and Los Angeles
Moller & Schumann Co.,
1022 Mission St., S. F.
Paraffine Paint Co....38-40 First St., S. F.
Standard Varnish Works, represented by W. P. Fuller & Co., S. F. and Los Angeles.

PAINT PRODUCTS
Felix Gross Co.....440 Ninth St., S. F.
Stockton Paint Company.....Stockton, Cal.

PAVING BRICK
Vallejo Brick & Tile Co.,
Alaska Commercial Bldg., S. F.

PHOTO ENGRAVING
California Photo Engraving Co.,
121 Second St., S. F.

PHOTOGRAPHY
R. J. Waters Co.....Market St., S. F.
Walter Scott.....558 Market St., S. F.

PIPE—CORRUGATED INGOT IRON
California Corrugated Culvert Company, Los Angeles and West Berkeley.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA
N. Clark & Sons,
112 Natoma St., San Francisco
Gladding McBean & Co., Crocker Bldg., S. F.
Pacific Sewer Pipe Company,
I. W. Hellman Bldg., Los Angeles
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

PLASTER
Empire Plaster. The Nevada Gypsum Co.,
Pacific Bldg., S. F.
Mound House Plaster Co.,
259 Monadnock Bldg., S. F.

PLASTERING CONTRACTORS
Geo. MacGruer....319 Mississippi St., S. F.

PLUMBING
Jno. G. Sutton Co.....243 Minna St., S. F.
Peterson-James Co.....710 Larkin St., S. F.
Weitzel & Grass .....105 Fulton St., S. F.
Wittman, Lyman & Co., 340 Minna St., S. F.
Coleman, Alex., 706 Ellis St., S. F.

PLUMBING FIXTURES, MATERIALS, ETC.
Crane Co....Second and Brannan Sts., S. F.
Jno. Douglas Co....571 Mission St., S. F.
N. O. Nelson Mfg. Co.,
978 Howard St., S. F.
Haines, Jones & Cadbury Co.,
851-859 Folsom St., S. F.
P. F. Howard Co.,
Second and Folsom Sts., S. F.
Kohler Co.....1001 Monadnock Bldg., S. F.
Glauber Brass Mfg. Co.,
Cleveland, O., 1107 Mission St., S. F.
Louis Lipp Company, Winton Place, Ohio.
Pacific Coast Office, 693 Mission St., S. F.
Mark-Lally Co..First and Folsom Sts., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent .....135 Kearny St., S. F.

PLUMBERS' SUNDRIES
Orca Sanitary Toilet Seat, manufactured by Orca Mfg. Co.,
700 Hooker & Lent Bldg., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

POWER PLANT EQUIPMENT
F. Harvey Searight...817 Shreve Bldg. S. F.

PULLEYS, SHAFTING, GEARS, ETC.
Meese and Gottfried Company.....San Francisco, Seattle, Portland and Los Angeles

RAILROADS
Southern Pacific Co.....Flood Bldg., S. F.
Western Pacific Railroad..Mills Bldg., S. F.

ROAD MACHINERY
Langford, Bacon & Myers,
Rialto Bldg., S. F.
Iroquois Iron Works (Barber Asphalt Company) .....Head Bldg., S. F.

ROAD CONTRACTORS
Engineering and Construction Co.,
Timkin Bldg., San Diego, Cal.

REFRIGERATORS
McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton, Sts., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Lilley & Thurston Co., Rialto Bldg., S. F.
C. F. Weber & Co.....365 Market St., S. F.

ROOFING AND ROOFING MATERIALS
Ames-Irwin Co., Inc.,
Eighth & Irwin Sts., S. F.
Biturine Co. of America,
24 California St., S. F.
Davis Oil Refining Co.,
721 First Nat'l Bank Bldg., S. F.
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.,
Rialto Bldg., S. F.
Mallott, Peterson & Adams,
682 Monadnock Bldg., S. F.
Felix Gross Co.....440 9th St., S. F.

W. F. AVERY, PROP. PHONE KEARNY 5319

STANDARD IRON WORKS

ORNAMENTAL IRON BRASS AND BRONZE

Store Fronts, Elevator Enclosures, Fire Escapes, Grille Work, etc.

OFFICE AND WORKS 235-237-239 SHIPLEY STREET SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX *Continued*

ROOFING & ROOFING MATERIALS Cont'd.

Grant Gravel Co.... ...Williams Bldg., S. F.
L. B. Hooker Co...1330 Howard St., S. F.
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Monadnock Bldg., S. F.
Fibrestone & Roofing Co., Mutual Savings Bank Bldg., S. F.
Genasco Ready Roofing, sold by Parrott & Co.....320 California St., S. F.
Mackenzie Roof Co., 425 15th St., Oakland.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
United Materials Co.... Balboa Bldg., S. F.

ROOFING TIN

American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
N. & G. Taylor Co.....Philadelphia, Pa.
J. A. Drummond, 422 Chronicle Bldg., S. F.

RUBBER TILING AND MATTING

New York Belting & Packing Co., 129 First St., S. F.

SAND

Del Monte White Sand, sold by Pacific Improvement Company, Crocker Bldg., S. F.
Niles Sand, Gravel and Rock Co., Mutual Bank Building, S. F.

SANITARY DRINKING FOUNTAINS

N. O. Nelson Mfg. Co., 978 Howard St., S. F.

SASH CORD

Puritan Sash Cord Company. (For Coast Agents, see advertisement.
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCENIC PAINTING—DROP CURTAINS, ETC.

The Edwin H. Flagg Scenic Company. 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES

C. F. Weber & Co....365 Market St., S. F.
512 S. Broadway, Los Angeles.

SHEATHING AND SOUND DEADENING

"Hydrex" Waterproof Building Papers, "Hydrex" "Sanifor" Deafening Felt, manufactured by Hydrex Felt & Eng. Co., N. Y. and sold by Rolph, Mills & Co., Hansford Bldg., S. F.

SHEATHING & SOUND DEADENING—Cont'd.

Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.....Rialto Bldg., S. F.
Samuel Cabot Mfg. Co., Boston Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK

Berger Mfg. Co.....1120 Mission St., S. F.
Capitol Sheet Metal Works, 1927 Market St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.
Hibernia Sheet Metal Works, 219 Seventh St., S. F.
Olive & Cox.....85 Irwin St., S. F.
Western Furnace & Cornice Co., 1645 Howard St., S. F.

SHEET COPPER

C. G. Hussey & Co....565 Folsom St., S. F.

SHINGLE STAINS

Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

SKYLIGHT CORNICES, ETC.

Hibernia Sheet Metal Works, 219 Seventh St., S. F.
Olive & Cox.....85 Irwin St., S. F.

SPIRAL CHUTE

The Haslett Spiral Chute Co., 310 California St., S. F

STEEL AND IRON—STRUCTURAL

Central Iron Works..621 Florida St., S. F.
Enterprise Foundry Co., 200 Second St., S. F.
Judson Manufacturing Company, 819 Folsom Street, San Francisco.
Brode Iron Works....621 Howard St., S. F.
Mortenson Construction Co., 19th and Indiana Sts., S. F.
J. L. Mott Iron Works, D. H. Gulick, Agt., 135 Kearny St., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, Etc. Phone Market 1374; Home, J 3435..370-84 Tenth St., S. F.
Ralston Iron Works, Twentieth and Indiana Sts., S. F.
Schrader Iron Works .....San Francisco

H. W. ELLIS, Pres. & Gen'l Mgr. C. F. JOHNSON, Vice-Pres F. F. JOHNSON, Sec'y & Treas.

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ESTABLISHED 1885

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OF

Concrete Flat Slab Construction

Has been successfully used in every type of concrete fireproof structures embracing COURT HOUSES, SCHOOLS, STATE CAPITOLS, OFFICE BUILDINGS, HOTELS, WAREHOUSES, FACTORIES, HOSPITALS, MANUFACTURING PLANTS, BRIDGES, WHARFS, ETC.

A FEW MUSHROOM ADVANTAGES

Economy, both of materials and labor. Elimination of beams and girders, giving even thorough lighting, better ventilation, greater headroom, rapidity of construction, safety of erection, greater soundproof qualities, freedom from vibration, lower insurance rates, ease with which shafting, sprinkler system or overhead motors can be installed, etc. etc.

In light construction the customary column capitals may be omitted, as the shear at the columns is much less than enough to exceed allowable values.

No other system of construction permits the degree of precision in the computation of deflection and strength that is possible with the MUSHROOM SYSTEM. We guarantee the strength of the MUSHROOM SYSTEM under test of twice the working load.

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NOTE. C. A. P. TURNER, as the original inventor, has been granted PATENTS covering the basic element of CANTILEVER FLAT SLAB CONSTRUCTION, and is suing infringers in a number of cities on imitations of his construction.

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Hellman Building,
LOS ANGELES, CALIF.

C. A. P. TURNER,
Phœnix Building,
MINNEAPOLIS, MINN.

Agencies in all principal cities.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL AND IRON—STRUCTURAL—Continued
U. S. Steel Products Company,
Rialto Bldg., S. F.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Western Iron Works....141 Beale St., S. F.
Woods & Huddart ....444 Market St., S. F.

STEEL BARS FOR CONCRETE REINFORCEMENT
Baker & Hamilton,
4th and Brannan Sts., S. F.
Judson Manufacturing Company,
819 Folsom Street, San Francisco
Kahn and Rib Bars, made by Trussed Concrete Steel Co. See advertisement for Coast agencies.
Woods & Huddart ....444 Market St., S. F.

STEEL FURNITURE
The Keyless Lock Co.....Indianapolis, Ind.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and 615 S. Paulina St., Chicago.

STEEL PROTECTIONS FOR CONCRETE
Steel Protected Concrete Co.,
Represented by Lilley & Thurston, S. F.

STEEL STUDDING
Collins Steel Partition, Parrott & Co., S. F.

STORAGE SYSTEMS
S. F. Bowser & Co., 612 Howard St., S. F.

STORE FRONTS
Kawneer System, Kawneer Manufacturing Company, 420-422 Turk St., S. F.; branches in Portland, Spokane, Seattle and Los Angeles.
Hester System, sold by Western Builders' Supply Co., 155 New Montgomery St., S. F.

SURETY BONDS
Globe Indemnity Co.,
508 California St., S. F.
Mass. Bonding & Insurance Co.,
First Nat'l Bk. Bldg., S. F.
Fidelity & Deposit Co. of Maryland,
Mills Bldg., S. F.

TEMPERATURE REGULATION
Johnson Service Co., Monadnock Bldg., S. F.

TILING CORK
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. distributors. Pacific Coast Office, Phelan Bldg., S. F.; G. H. Freear, Mgr.

TERRA COTTA CHIMNEY PIPE
Dunleey & Gettle....79 City Hall Ave., S. F.
Gladding-McBean Co....Crocker Bldg., S. F.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
Thos. F. Rigney....9 City Hall Ave., S. F.

TILE
Indestructible Floor & Tiling Co.,
251 Kearny St., S. F.

TILE FOR ROOFING
Fibrestone & Roofing Co.,
Mutual Savings Bank Bldg., S. F.
Gladding, McBean & Company,
Crocker Bldg., S. F.
United Materials Co.....Balboa Bldg., S. F.

TIN PLATES
American Tin Plate Company,
Rialto Bldg., S. F.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
N. & G. Taylor Company, Philadelphia, Coast branch.....Chronicle Bldg., S. F.

TOILET SEATS
Orca Mfg. Co., 700 Hooker & Lent Bldg., S. F.

VACUUM CLEANERS
American Agencies Co., 501 Market St., San Francisco, 608 S. Olive St., L. A.
American Agencies, Ltd., 501 Market St., S. F.
Bill & Isenbeen, ...524 Pine St., S. F.
The Vak-Klean Vacuum Cleaner, Pneulectric Co., Pacific Coast Agts., 452 Larkin St., S. F.
Sanitary Vacuum Supply Company, 1601-3 Broadway, and 1600-2 Telegraph Ave., Oakland, Cal.
Giant Stationary Suction Cleaner, manufactured by Giant Suction Cleaner Co., 731 Folsom St., S. F., and 3d and Jefferson Sts. Oakland.
The Blaisdell Machinery Co.,
507 Mission St., S. F.
General Engineering Company,
281 Natoma St., S. F.

VACUUM CLEANERS—Continued.
"Tuec" Air Cleaner, manufactured by United Electric Co.....523 Mission St., S. F.
"Kotrex" Cleaners, Guernsey & Wheeler, district managers., Rialto Bldg., S. F.

VACUUM HEATING
Van Auken System of Vacuum Heating.

VALVES
15 Fremont St., S. F.
Jenkins Bros.....247 Mission St., S. F.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co.....317 Howard St., S. F.

VARNISHES
S. F. Pioneer Varnish Works,
816 Mission St., S. F.
Moller & Schumann Co.,
Brooklyn, N. Y., Chicago and S. F.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co....365 Market St., S. F.
Eriesson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents. 356 Market St., S. F.

VENTILATORS AND SHEET IRON
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
New Era Dustless Mfg. Co., Railway Exchange, Chicago, Ill.

WALL BEDS
Marshall & Stearns Co.,
1154 Phelan Bldg., S. F.
Ideal Disappearing Wall Bed Co.

WALL BOARD
Phelan Bldg., S. F.
California Colonial Wall Board, mfrd. by Mound House Plaster Co.
259 Monadnock Bldg., S. F.
Bestwall, mfr'd by California Bestwall Company, Lilley & Thurston Co., distributors, Rialto Bldg., San Francisco.

WATER HEATERS
Jos. Thieben Co., agents Pittsburg Heaters,
667 Mission St., S. F.
F. Harvey Searight.....Shreve Bldg., S. F.
Humphrey Heater,
565 N. Rose St., Kalamazoo, Mich.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Concrewaltum, made by Goheen Mfg. Co., Canton, O. See advertisement for Coast distributors.
Fibrestone & Roofing Co.,
Mutual Savings Bank Bldg., S. F.
Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co. .....Rialto Bldg., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Building Material Co., Inc.,
583 Monadnock Bldg., S. F.
Buswell's Steel and Concrete Paints,

WHITE ENAMEL FINISH
Oakland, Cal.
H. M. Perry & Co., 145 Montgomery St., S. F.
"Satinette," W. P. Fuller & Co.,
S. F. and all principal Coast cities.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Company. See adv. for Coast distributors.

WINDOWS, REVERSIBLE, ETC.
Tabor Sash Fixture Co., Boyd & Moore, Agents .....356 Market St., S. F.
The "Holdfast" Bulldog and "Hookfast" Window Adjusters, mfr'd by The Casement Hardware Co., 175 State St., North Chicago, Ill.
Casement Co.,
175 State St., North, Chicago, Ill.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., S. F.

WOOD MANTELS
Fink & Schindler.....218 13th St., S. F.
Mangrum & Otter....561 Mission St., S. F.
Thos. F. Rigney.....9 City Hall Ave., S. F.

PAINT =

CARBONIZING COATING PAINT	The greatest Preserver of Iron and Steel made; unaffected by gases, fumes, salt atmosphere, and many characters of acid.
GALVANUM PAINT	The ONLY paint made that will adhere for years and protect Galvanized Iron.
CONCREWALTUM PAINT	The ONLY paint that makes walls, ceilings, hollow tile, concrete surfaces, brick, stone and masonry construction impervious.
ASBESTOS ORE PAINT No. 1180	A fire-proofing paint, a paint preservative of wooden trestles, wooden railroad bridges, a fire resistant or Fire Proofing Paint.

Manufactured exclusively by

THE GOHEEN MANUFACTURING CO.

CANTON, OHIO, U. S. A.

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Sherman Kimball & Co., Inc.	507 Mission Street	San Francisco, Cal.
A. J. Capron	17 Ainsworth Building	Portland, Ore.
S. W. R. Dally	69 Columbia Street	Seattle, Wash.
Lewers & Cooke, Ltd.		Honolulu H. I.
Takata & Co.	No. 1, Yurakucho Ichome	Tokio, Japan

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DOUBLE ACTING, RECIPROCATING
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ANY CAPACITY, SELF-OILING,
95% EFFICIENCY

The Machine that will RENOVATE

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Ferroinclave ROOFS are erected without using forms

Ferroinclave corrugated sheets are laid on the purlins, riveted and clamped—making one continuous sheet. The concrete is first applied on the upper side and then on the lower—all without the use of troublesome forms. This makes a strong and light roof—quickly erected.

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CABOT'S CREOSOTE SHINGLE STAINS

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Distinguishable by their soft depth and freshness of color, richness of tone, and durability. No muddy or greasy effects, no blackening, no washing off. They have stood the test more than twenty-five years.

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Apron. . . . . 5″

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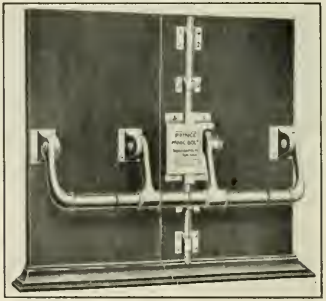

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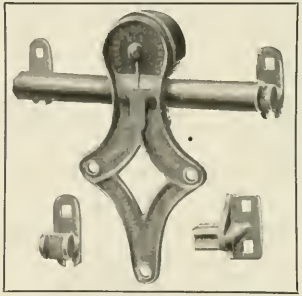

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It was the only exhibit from the Pacific Coast and was pronounced one of the best in the entire show.

Los Angeles Pressed Brick Co.

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Your regular hardware dealer no doubt handles this hanger, but if not, we'll send you samples. If you haven't already got it, you ought to have our No. 10 Catalogue.

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IT CAN'T BE——————————FIGURE IT OUT

Mineral products that will properly combine to make a perfect damp-proofing—
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That's Liquid-Stone

Casine, Glue, Parafine, Pitch, Tar, China Oil, Turpentine Drier, Etc., are cheap, will make cement damp-proof for the time being and look good when first applied. This is because they have a temporary chemical action. But it's only temporary and can't last. Figure it out.

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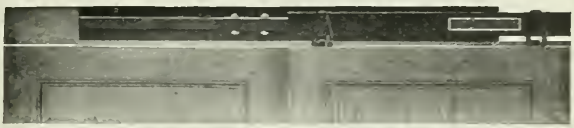

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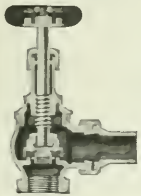

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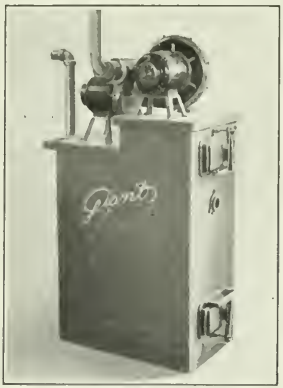

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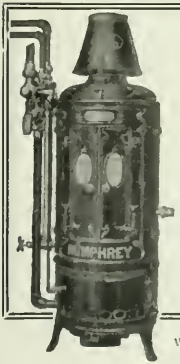

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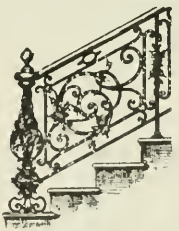

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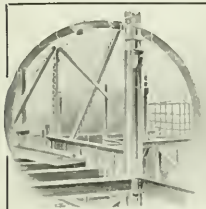

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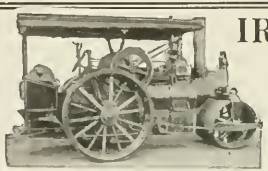

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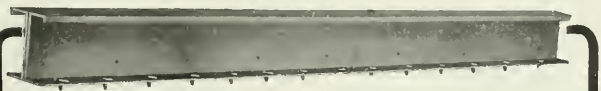

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Pacific Coast States

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Entered at San Francisco Post Office as Second Class Matter.

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DESIGN FOR HOTEL AND STORE BUILDING, LOS ANGELES
Harrison Albright, Architect

Frontispiece
The Architect and Engineer
March, 1913

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXXII. MARCH, 1913. No. 2

Fourth Exhibition of the Architectural League of the Pacific Coast*

THE Architectural League of the Pacific Coast held its fourth annual exhibition in Los Angeles in February under the auspices of the Los Angeles Architectural Club. The total attendance was approximately 40,000, about the same as viewed the exhibit of the previous year. Interest in architectural exhibitions is growing on the part of the general public and if a ground floor location, such as was obtained last year, could have been secured for the display this year the attendance would no doubt have been much larger. The success which was achieved this year has encouraged the club in a determination to do even better in 1914.

A writer in the Contractor and Builder comments on the show as follows:

"When architects hold an exhibition of their works (and this is the fourth in Los Angeles) it is an indication that the old style of architect who designed in Carpenter's Gothic, and made an alla podrida of the other styles, is passing away; and that his place is being taken by the highly bred architect trained in the best native and foreign schools. For the beauty of the city the general public should find out who those men are, and there is no better means than by such an exhibition.

"At the same time it is incumbent on the architects that their drawings should be rendered in the most artistic style possible. From some of the exhibits a few architects seem to think that size of canvas and brilliancy of paint pot are the chief things to be desired, but this is commercializing architecture too much. Others again render their drawings ridiculous when a seven by four foot canvas is required to depict a thousand-dollar bungalow.

"Of the merits of the two styles of rendering, the color and the etching, much might be said, though the color is the more effective. A brilliant and artistic example of the mixture of the crayon, the water-color and the pen, was to be seen in some drawings by Messrs. Allison and Allison of the State Normal School, which were a very academic rendering of the Byzantine style adapted to local conditions. Of water color alone Messrs. Withey and Davis showed a very artistic drawing of the Santa Ana Polytechnic School—one of the best pictures in the exhibition.

*Owing to limited space the selections from the exhibition which accompany this article are principally of commercial, public and ecclesiastical work. Next month the domestic architecture of the Los Angeles architects will be shown.

Bronson Building, Los Angeles
John C. Austin and W. C. Pennell, Associated Architects

"To design an effective sky-scraper is the most difficult problem facing the architects today, so that very few of these buildings are really successful. Those now being erected in Vancouver, B. C., are such monstrosities that they have been very aptly described by a Canadian M. P., as examples of the 'Packing Case' style of architecture—packing cases with holes in them. Los Angeles has long since left that stage, as the Story building and others testify. There were a number of sky-scrapers in the exhibition, but only those by Thornton Fitzhugh, Austin and Pennell, and E. T. Foulkes can be considered eminently satisfactory. In drawing sky-scrapers the mistake is often made of placing the picture line too low; consequently, as in Mr. Foulkes' drawing, the eye is deceived and the upper part of the building looks twisted.

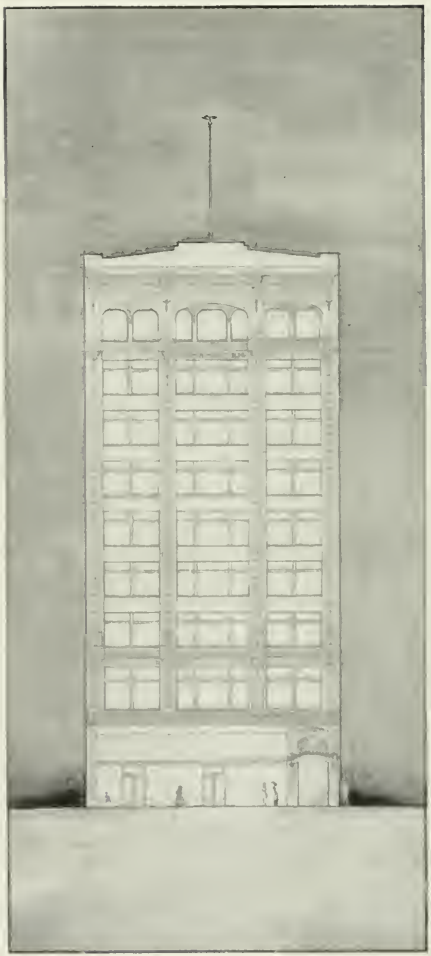
"Of churches there were not many examples. Gothic is a difficult style to work in and requires special training, consequently only those exhibited by Messrs. Austin and Pennell, Frohman and Martin, and W. C. Hayes, of the First Presbyterian Church, Oakland, can be commended on their merits. At the same time Mr. Elmer Grey had a clever pencil sketch of a classic Scientist Church at Long Beach.

Sketch for the Little Theatre, Los Angeles
Morgan, Walls & Morgan, Architects

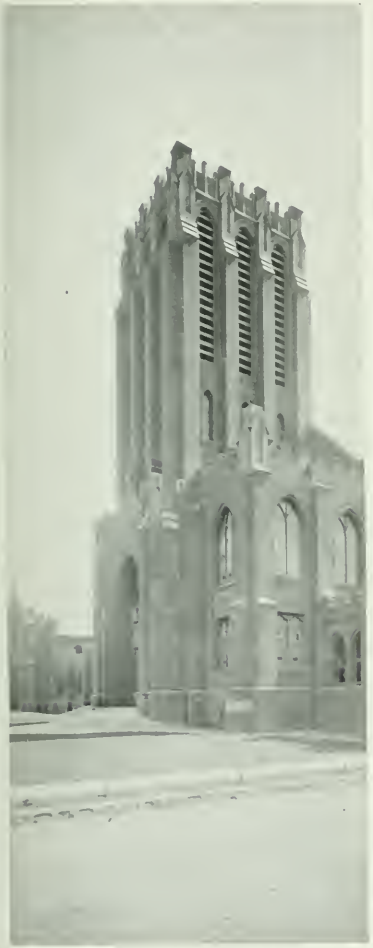
Bilicke & Rowan Building, Los Angeles
Morgan, Walls & Morgan, Architects

Hotel Cordova, Los Angeles. (A Striking Example of the Modern Adaptation of Aztec Architecture.)

Neher and Skilling, Architects



Stephen M. White Building, Los Angeles
R. B. Young and Son, Architects



Pilgrim Congregational Church, Pomona
Robert H. Orr, Architect *Ferdinand Davis, Associated*

I. N. Van Nuys Building, Los Angeles
Morgan, Walls & Morgan, Architects

Proposed Theater and Loft Building, Los Angeles
J. M. Haenke, Architect

"Of mere elevations one of the cleverest renderings was that by Robert M. Taylor of a facade at Venice pier. The opalescent finish is highly effective.

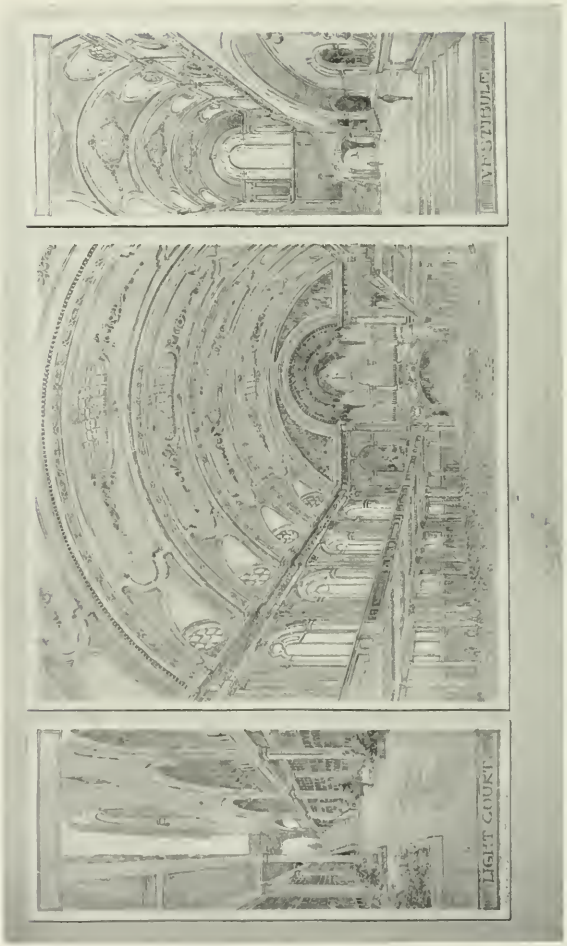
"The cleverest work of the architects is in the residences, probably because they have more experience with them. It would be difficult to select the best examples, they were so numerous, but those by J. Martyn Haenke and Arthur B. Benton were well worth examination and scrutiny. The latter's drawing was one of the most picturesque designs in the exhibition, and most artistically rendered in pen and ink with a dash of color.

"There were a number of clever sketches taken in foreign lands by Chas. H. Biggar, both in pencil and water color; also some remarkably able drawings by students, which almost put their elders into the shade, notably that by Wm. Ludwig, and a twenty-five story hotel by W. S. Davis, which solves the problem of such an exceedingly high building very satisfactorily and artistically.

Professional Building, San Diego
MacCalman & Friary, Architects

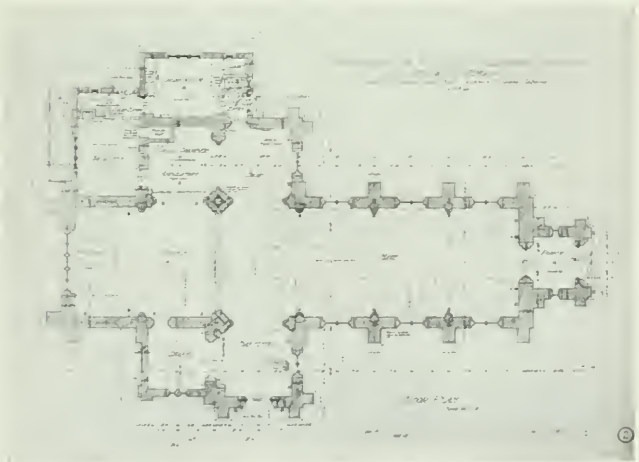
Malden [illegible] School—End Detail
Withey & Day[illegible] Inc., Architects

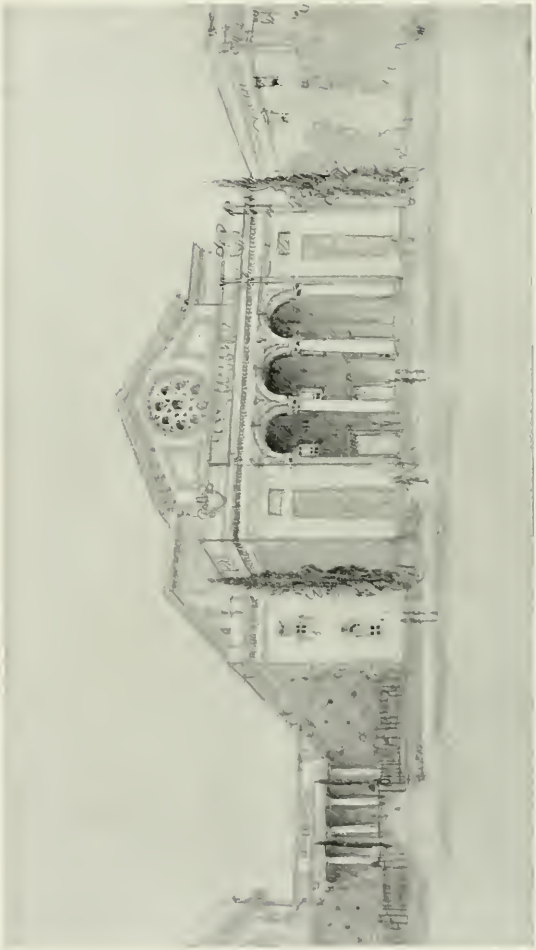
A Concert Hall, Massachusetts Institute of Technology
Walter Davis, Architect



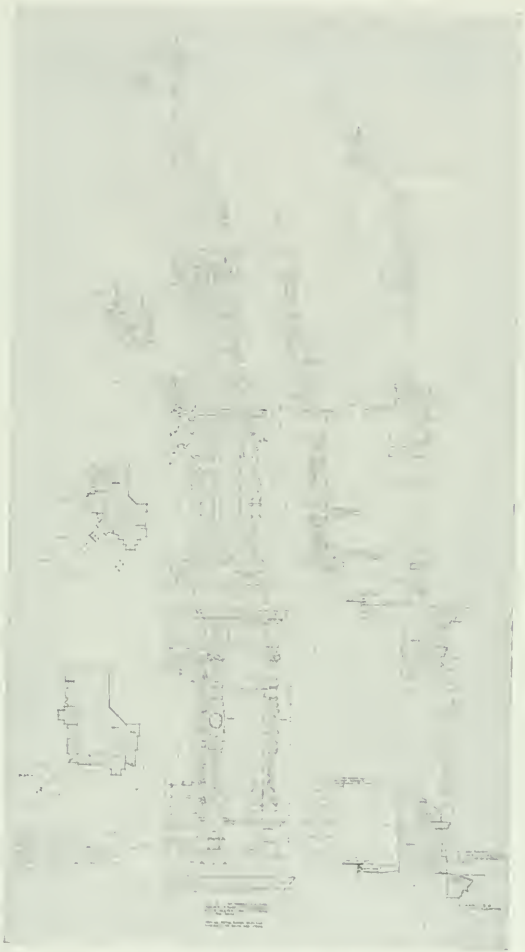
Bibl. Institute, Los Angeles.

Walker & Vawter, Archts.





Sketch of First Church of Christ, Scientist, Long Beach
Elmer Grey, Architect



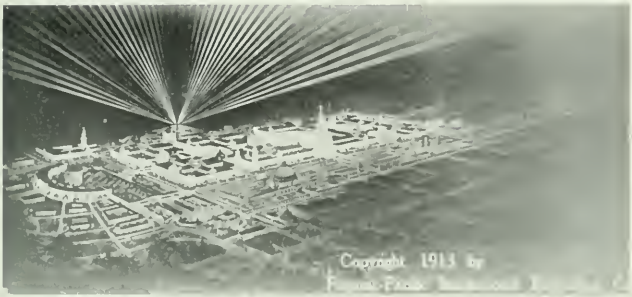
Details, First Congregational Church, Riverside
Myron Hunt, Architect

Johnson Hall of Letters, Occidental College
Myron Hunt, Architect

Tudor Arms Hotel Los Angeles
Parkinson & Bergstrom, Architects

Mac Im McNaughton Residence
Withey & Davis, Inc., Architects

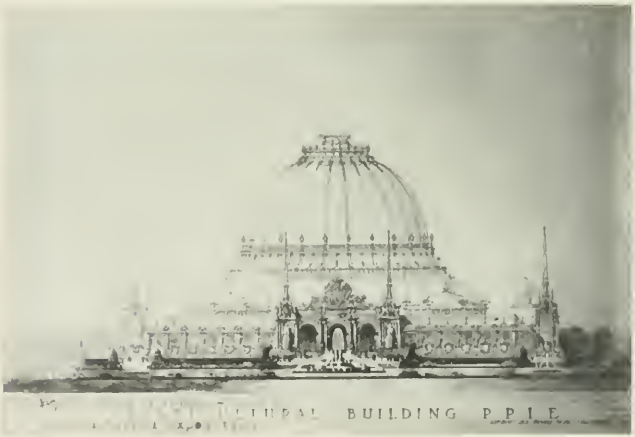
Main Entrance Tower—Panama-Pacific Exposition, San Francisco



Bird's-eye View, Night Illumination—Panama-Pacific Exposition, San Francisco

Perspective Study of Palaces—Panama-Pacific Exposition, San Francisco

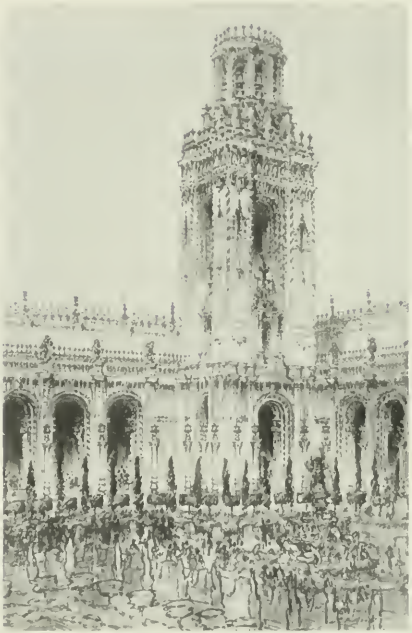
Perspective Study of California Counties Building, Panama-Pacific Exposition, San Francisco



Horticultural Building, Panama-Pacific Exposition, San Francisco

A Hall for Sculpture, Massachusetts Institute of Technology
Walter Ogden, Architect

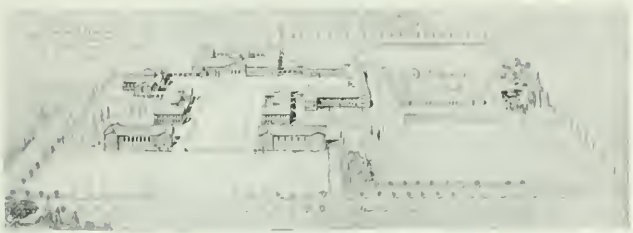
Perspective Study of Pathway, Chicago-Pacific Exposition, San Francisco



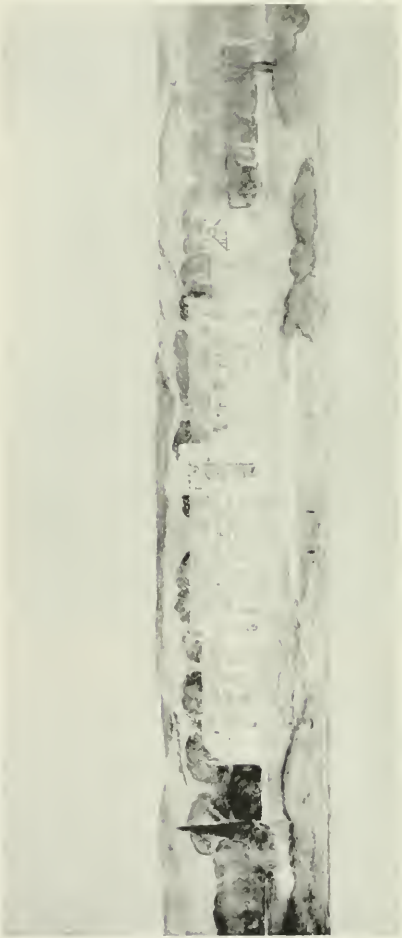
Perspective Study of Building
Panama-Pacific Exposition, San Francisco

Plan of Panama-Pacific Exposition, San Francisco

Perspective Study of Building
Panama-Pacific Exposition, San Francisco



Bird's-eye Perspective, Los Angeles State Normal School
Allison & Allison, Architects



Boys' B[illegible]

By H. L. Shay, University of Pennsylvania School of Architecture

Proposed Hotel, Los Angeles
Geo. C. Austin and W. C. Pennell, Associated Architects

"Altogether, the exhibition proved a credit to the architects of Los Angeles and argues well for the future beauty of the city, now in the chrysalis stage, if the public backs up the efforts of the architects by demanding only the best work. Good architecture costs no more than bad, and has a monetary value in appearance which it never loses."

An interesting feature of the exhibition was the display of preliminary studies of buildings for the Panama-Pacific Exposition.

The entire exhibition was prepared and conducted under the direct supervision of the following committees:

Exhibition Committee—Myron Hunt, Chairman; D. C. Allison, publication; A. C. Munson, hanging; A. R. Kelly, finance; E. J. Cheesewright, decoration.

Publication Committee—D. C. Allison, Chairman; Octavius W. Morgan, Jr., A. F. Rosenheim, C. H. Kysor and H. M. Patterson.

Finance Committee—Arthur R. Kelly, Chairman; John J. Frauenfelder, Octavius Morgan, Frank D. Hudson, Frederic L. Roehrig and Arthur B. Benton.

Hanging Committee—A. C. Munson, Chairman; H. F. Withey, Scott Quinton, W. A. Sharp, J. T. Vawter, A. R. Walker, Elmer Grey, Otto Jansen, Frank T. Kegley, Henry E. Bean and Robt. M. Cassidy.

Splendid Display of the Los Angeles Pressed Brick Company at Chicago

Some Features of the Recent Clay Products Show in Chicago

(By a Special Representative)

THE second annual Clay Products Exposition held in the Coliseum, Chicago, February 20-March 8, representing to clay manufacturers throughout the country what the New York auto shows do to the motor world kept the public interested from beginning to end. Many unusual and novel features served to pack the immense building daily, among which may be mentioned a complete brick cottage with clay tile roofing erected at a total cost of but two thousand dollars. This cottage of two stories containing a living room, dining room, and kitchen downstairs, three bedrooms and bath upstairs, laundry, furnace and cold storage rooms in the basement was designed by and constructed under the supervision of Walter Burley Griffen, the Chicago architect who won a prize of $8500 for evolving the best architectural scheme for the new capital city planned by the Australian government. A class in clay modeling from the Chicago Art Institute was an attraction which never lacked interested crowds. Pottery of various kinds was being fashioned out of plastic clay in another section of the building. One of the many strange sights was a postoffice built of brick sent by parcels post from Seattle to the Atlantic Coast, and all showing the manufacturers label, stamped and addressed tags.

A representation of Mrs. O'Leary's kicking cow domiciled in stable—frame of course—recalled to mind the cause of Chicago's destruction by fire in 1871. The famous Kilties Band in native costume from Scotland was retained especially for the clay show as well as Hand's Band of Chicago. In the annex stereopticon pictures accompanied by lecture impressed thousands with the advantages of brick for building and paving.

An Artistic Bit of Faience Tile

Occupying a central portion of the Coliseum was a magnificent exhibit of the Chicago Face Brick Association costing twenty thousand dollars. There were two hundred and eighty-five face brick plants represented by this association and the display was particularly fine, showing as it did in pleasing arangement several hundreds of new and artistic creations in face brick. Although about every known color and texture of brick was included in this as well as in other exhibits the tendency was to feature rough texture brick in a wide variety of reds, browns and grays with dozens of variations of these colors harmoniously blended into oriental and tapestry effect. In parallel lines north and south of Face Brick display were exhibits of nearly every material made of clay. One of the world's largest manufacturers of hollow tile had a miniature or quarter actual size two-story house constructed of hollow tile throughout and furnished with doll-sized furniture, electric lights, curtains, etc.

One section of the Coliseum was given over to a display from the Wisconsin Clay Manufacturers Association, another for Iowa and one for New York and New England. There were several instructive and interesting exhibits of sewer pipe, drain tile, flue lining, etc. One of the former espe-

cially showing the relative merits of salt glazed sewer pipe and concrete pipe, a piece of each being placed in a glass jar containing ten per cent solution of sulphuric acid—the amount contained in sewage. In less than one week's time the cement pipe had almost totally disintegrated while the clay pipe was not affected in the least.

A number of very attractive displays of common brick proved a revelation of what can be accomplished with same, not only in a sense of utility, but art. It may be of interest to add that one firm in Chicago has an output of five hundred million common brick a year.

Then there were exhibits of roofing tile, paving brick, sanitary ware, wall coping, beautiful specimens of craftsmanship in vases and lamp designs for gas and electric use. A strikingly beautiful exhibit of faience tile in a combination of greens and grays represented three ideal treatments in architectural faience—a drawing room, a library and a dining hall. The mantels, the floors, the fountain and the wall panels blended perfectly in harmony of color and design. The writer was pleased to see one exhibit from the Coast, that being a very attractive display from the Los Angeles Pressed Brick Co., two cuts of which are reproduced here. This firm showed some thirty varieties of brick besides roofing tile faience, mantel and quarry tile, forming a greater variety of products than shown by any other concern. While this company's exhibit was placed alongside of the best in the country it did not suffer from a comparison, but on the other hand, was generally conceded one of the finest showings made.

Altogether the clay show was a remarkable and successful event. It was conservatively estimated that over three hundred thousand visitors witnessed the exhibition.

* * *

Portland Auditorium Judgment Upheld

THE architectural profession will be interested in the finding of the Competition Committee of the American Institute of Architects, which investigated the conduct of the jury award in the recent Portland Auditorium competition. It will be recalled that the question was raised at the time the judgment was made that the jury had not acted on professional lines.

At a meeting of the Board of Directors of the American Institute of Architects, held in Washington December 9th, Mr. Frank Miles Day, Chairman of the Committee on Competitions, was present and submitted proofs of the proposed revision of the code, which was thoroughly gone over in detail, and such changes and additions and abbreviations as were agreed to were noted by Mr. Day in his copy of the document. It was moved, seconded and carried that the proposed revision be adopted as amended. Mr. Day stated that his committee had been instructed to include in its report a description of the Franklin Engraving Company and the Portland Auditorium Competitions, and to give the lessons to be learned therefrom, and he asked that that part of the report be carefully scrutinized, to make sure that it represented the absolute views of the board. The correspondence bearing on the Portland Auditorium was then read, following which the secretary offered the following resolution:

Be it resolved that the minutes of the meeting of the Executive Committee of August 1 be amended by the statement that the report of the Committee on Practice in regard to the competition for the Portland Auditorium was accepted. This was unanimously adopted and the secretary was directed to send the following night letter: "Report of Committee on Practice declaring that no prima facie case of misconduct exists against any member of the jury in the competition was accepted by the Board of Directors, and no charge has been made against Mr. Freedlander.

Architect Willis Polk of San Francisco was a member of this jury.

San Francisco Armory Now Under Construction
California State Engineering Dept., Jno. W. Wollett, State Architect

Mistakes Architects Make

By CHAS. E. WHITE, Jr., in Building Progress

THE career of every architect, like that of other professional or business men, is usually fraught with mistakes, more or less petty most of them, but nevertheless important enough to be worthy of correction. This is especially true during those early years when the young architect first establishes himself in business. It is then that he comes up against the business side of his profession for the first time. He comes into personal contact with clients, contractors, salesmen for material and supply houses, and estimators who call daily to figure on new work. All this is new to the youthful architect. No matter how much he has come in contact with these business men while draftsman in the employ of another architect, conditions are very much changed as soon as the young man goes into independent practice.

If the ideal "big man" is one who can always be easily approached by any business man, then the "little man" is the young architect who shuts himself up in his private office and refuses to see contractors or salesmen. The temptation to do this—to shut oneself up—is considerable, for nothing requires greater application and individual absorption than the every-day work of the architect. Interruptions are annoying, and for this reason some architects are well-nigh unapproachable save through certain channels considerably bound by red tape. Yet in most cases this is a mistake. The architect who is too busy to see the rank and file of salesmen, contractors, and solicitors calling upon him misses something—something necessary to the well rounding of his career. Contact with contractors is of great moment to every architect. There is much to learn from the experience of these men—so much that older architects have said without hesitation that they owe much of their practical knowledge of building to contractors.

In an Eastern city a few weeks ago a business man called upon a certain young architect (whom he had not met) on a matter that might prove extremely advantageous to the latter. He had no cards with him, nor did the stenographer ask his name. "Mr. Johnson is busy," she said, after passing into the private office to consult her employer.

"Very well, I'll wait," replied the man.

Ten minutes went by—then fifteen minutes, but there was nothing doing. In the meantime the impatient caller could hear scraps of conversation drifting through the open door. It was evident that Mr. Johnson had a friend with him, for an animated conversation on golf filtered through the open door.

After a delay of considerable more time the visitor was finally admitted to Mr. Johnson's presence; but he did not broach his business to the younger man; he decided that the man he needed for the work he had in mind must be a man of another caliber.

In another big city where several architects have gained world-wide fame a quiet little man one day walked into the office of a well-known architect and asked to see him. "Mr. Rose is very busy," said the office boy. "Will any one else do?"

"No, I'd like to see him personally," replied the other. "Just ask Mr. Rose when he can see me." Evidently Mr. Rose could hear what was said, for "Oh, have him see me tomorrow," was heard in impatient tones from the open door of the private office.

When "tomorrow" came the quiet little man walked into the office of another architect. "I'd like to see Mr. Jones," said he in his quiet voice to the stenographer.

The stenographer vanished without question. "Certainly, sir," said he, and reappearing, "Mr. Jones will be pleased to see you."

When the quiet little man walked out from Mr. Jones' office he left with him a signed contract for plans, specifications, and supervision on a big country residence which the quiet man (treasurer of one of the largest corporations in the United States) was building for a permanent home for himself and family.

These are both true incidents, with the exception, of course, of the names. How many other architects, especially younger men, have made the same mistake?

One of the most successful architects I have ever met, a man of middle age who has been in business for forty years, has his office arranged in this manner: Directly from the outside corridor one enters into a little reception hall with a wide-open door (leading to the private office) just opposite the corridor door. Just inside this doorway, in full view of everyone who enters, stands the desk of the "boss." Any one can get to him at any time. There are no frills in this office. Every part is devoted to business—indeed, the business efficiency of this office is well known throughout the city, to clients as well as contractors.

I asked this architect if he lost a great deal of time talking to salesmen. "Certainly, sometimes," he replied, "but I discovered years ago that salesmen have as much to teach me as I have to teach them. It is to my interest and the interests of my clients that I be kept informed of every new device used in building as soon as it appears. Salesmen who call upon me are of great assistance to me. They know, usually, all the gossip of the building trades—which offices are busy and which are not—who got such and such contract—and a thousand other things, not only of general interest to me, but often of genuine help."

"Mr. ——— wastes no time when he talks to salesmen," said this architect's stenographer when I questioned him. "He is so well known to all of them, and they are so pleased at the ease with which they can approach him, that they are careful to state their business quickly. I have no doubt," he went on, "Mr. ——— is better known to hundreds of contractors in this and nearby cities than any other architect. Much of his business comes through the influence of these same contractors, who often recommend him to prospective owners. Clients like to do business with him, too, and when it comes to draftsmen, why, they love him like a father; they will do anything for him."

Contractors are frequently up against it for lack of blue prints when they come to bid on a new building. Architects, usually in a great hurry to get bids, sometimes have but half a dozen sets of blue prints, which they distribute to as many general contractors, forgetting that each general contractor may be obliged to take half a dozen sub bids. Often this makes it impossible for general contractors to take competitive sub bids, with the result that each bid is higher than it would be if the architect furnished them with more blue prints. Sub bids frequently vary as much as 10 per cent on the same job. Careful competition among sub bidders is bound to secure lower prices, greatly to the owner's advantage if his architect would be just a little more liberal in providing sufficient blue prints.

Another criticism sometimes made of the architect by contractors is that the quality of blue prints is often very poor. Any superintendent who has been on a job and tried to read figures and dimension lines on a blue print which has bleached out almost white will agree with me in the poor quality of blue prints frequently furnished.

Sometimes serious mistakes on the job are made by incorrect reading of illegible figures. Remember, the mason must get his lines accurately, often working to fractions of an inch, so it is up to architects to give him legible plans to work from.

Linen blue prints would be ideal, but they are almost prohibitive in cost. A very satisfactory substitute lies in using heavy paper, carefully printed with clean white lines on a strong blue ground—just such prints as anybody can make with first-class materials when proper time is taken for printing and washing.

An excellent way to preserve blue prints and prevent them from becoming torn on the job is to mount the set used there on heavy cardboard, each sheet separately.

Examine two sets of plans turned out by any two architects and you will find great variation in the way details are drawn. In the office of a certain architect who does residence work exclusively an interesting fact recently developed. About a year ago plans for a residence were made and bids taken. As frequently happens, the bids were so high that the owner decided to wait over a season, thinking he might get lower bids. When the next year came around orders were given to take new bids and the architect got out his drawings to look them over before having new blue prints made. He noticed that few details were included in the drawings—so few, in fact, that he wondered how such a set of plans ever got out of his office until he remembered how hurriedly they had been made. A set of inch-scale details was immediately drawn up and included in the plans—simple drawings showing designs of millwork and special features in the construction.

When bids came in once more the architect was astonished to find prices lower than they had been the first time, notwithstanding the brisk advance in cost of building materials. Upon investigation he found that the lower bids were the result of the new details. Contractors who figured the first time, not understanding just how the house was to be built (owing to incomplete drawings) had been afraid to figure close, but as soon as they saw the illuminating new details, they could figure more accurately.

Details are important items in plans, and architects who neglect to prepare details until contracts are let frequently unintentionally make work cost more than it should. Even a few quarter-inch scale details showing special features of construction are very useful to the contractor in figuring. Details of cabinets, cupboards, inside and outside trim should always be included, and this method may be depended upon to procure for the owner a closer figure than when details are omitted and contractors have to "guess at" what the architect wants. When they do "guess," you may depend upon it contractors "guess" high enough to escape any possible loss to themselves.

The same criticism made about plans may be made about specifications. Ambiguous statements—vague clauses not clear in meaning or which seem to contradict the plans, usually alarm contractors who do not know precisely what the architect is driving at. Then the contractor tacks on a few dollars more as a "factor of safety," and the owner pays more for his building than he ought to.

Vague specifications difficult of interpretation are not conducive to good workmanship from the contractor's employees. The workman on the job is too busy to ponder very long over incomplete specifications—nor is he a mind-reader who can understand what was in the architect's mind when the specifications were written.

If architects really wish to help their friends the contractors, they should also correct an abuse that often causes contractors much concern—and that is procrastination in preparing full-size details. Every contractor knows how busy most architects are, and they appreciate how hard it is to get full-size details out promptly; nevertheless, so many jobs are seriously delayed by this cause (and so frequently the delay is blamed entirely to the contractor) it is only fair to say that this delinquency should be corrected by every architect ambitious to be perfectly "square."

Just as soon as the contract for a building is let architects ought to follow up with a complete set of full-size details. Prompt service in this regard will do much to prevent delay, Sir Architect, and every contractor will vote you a "gentleman."

Another thing that makes the biggest kind of hit with contractors is promptness in issuing certificates as soon as they are due. Nothing pleases any of us more than to receive money immediately it is due, yet it is surprising how dilatory some architects are in giving certificates, frequently causing contractors to wait for their money day after day.

Some architects make it a special practice to issue certificates immediately they are due, whether contractors ask for them or not. All contractors like to do business with such. Indeed, I have no doubt *their* work is let at lower prices than the work of other less accommodating architects—and, no doubt, they have less trouble on the job.

* * *

With Many Items. "Did you hire that plumber I recommended to you?"
"Yes."
"How did he turn out?"
"Oh, he filled the bill, all right."—Boston Transcript.

Some Night Views of the Cities

NIGHT — in the Cities — seems, these times, to be created as a medium for the expression of Light in all its wondrous Effectiveness.

Note how impressively the Architectural Lines are brought out in some of the Illuminations

Courtesy of Good Lighting

Panorama of Denver, Colorado

Baltimore, Md., at Night from the Bay

Washington Statue on the Steps of the Sub-Treasury, Wall Street, New York

A Street Illumination with Canopy Effect

Illumination of a Business Street

Hotel Folsom, San Francisco, Showing How Building Has Settled

Trying to Save a Concrete Building of Faulty Design

MUCH interest is attached to the efforts of Architect Alfred Henry Jacobs of San Francisco, to save a concrete building on Folsom street, near Fifth, San Francisco, which is threatening to collapse owing to settlement of the foundations, causing the building to lean westward nearly 15 inches, as indicated in the accompanying photograph taken by Moulin early in February.

The building was designed and erected soon after the big fire in 1906 by Architect Frederick Noonan, now of Los Angeles. The structure is known as the Hotel Folsom and is four stories and basement with reinforced concrete walls, floors and roof. All the interior partitions are wooden lath on studs. The dimensions of the building are 50x85. The loads are supported by four rows of columns, one row on each of the long exterior walls and two rows down the center. Across the building the spans are respectively center to center 22 feet, 6 feet and 22 feet. Reinforced concrete girders of approximately 2 feet 6 inches deep by 1 foot 10 inches wide span from each exterior wall to corresponding column near the center. Between the center columns—that is, across the 6-foot span, there are no girders, the columns being simply tied at the center of the building by means of 6-inch reinforced slab. The foundations consist of three slabs each 85 feet long, two each 85 feet by 4 feet 6 inches along the exterior walls, and one 6 feet 6 inches wide by 85 feet running down the center.

On the 12th of December, 1912, the building leaned to the westward 14⅜ inches, and to the southward 4⅝ inches. This settlement was due to the fact that the building rested on a thin top soil or fill below which was blue marsh mud. Borings revealed the fact that at a depth of approximately 30 feet there was a stratum of hard green clay about 7 feet thick, below which was a compact yellow sand that was penetrated to a depth of 6 feet, beyond which depth borings were not made.

Architect Jacobs was asked by the owner to assist him in saving the building. That the undertaking is no small one and is likely to be set with difficulties is evident from the architect's own statement of the situation:

"The settlement of the building had, as far as I can learn," explained Mr. Jacobs, "taken place gradually from the time of completion up to the earthquake of July, 1911, at which date the progress of the settlement became more rapid. In the interior as well as the exterior many cracks due to the distortion were noticed. These cracks as a rule were at the junction of girder and column and were more noticeable on the lower than on the upper floors. The plastering on the studs throughout was badly cracked.

"I was consulted by the owner as to the possibility of saving this structure and various schemes for straightening it were discussed. There seemed, after careful consideration of these schemes, to be but two that promised any measure of success, and indeed in these two cases the chances of saving the building seemed but very small.

"The first of these schemes was to take the adjoining lot, exchange properties with that owner, prepare a foundation on piles, driving piles between the present building and the prepared foundation to form a foundation for a track, cut the building off at the basement level and move it bodily to the adjoining foundation. Various bidders submitted estimates on this scheme, and none would assume any responsibility for the ultimate success of the work. The bids in every case ran to a figure that was prohibitive.

"The second scheme was suggested by the late Mr. M. Keatinge (who ably superintended the work up to within one week of his death, which occurred February 13th, 1913), and we determined to try it on a chance. It is this scheme that is now being followed.

"In brief, the idea was this: Shores were placed against the westerly side in an attempt to arrest further settlement. Shafts were then sunk under the foundation on the westerly side to the hard green clay. These shafts measured approximately 5x10 feet and were sunk in the same manner as a shaft in a mine; in fact, miners were procured to do this work. These shafts were then filled with concrete up to the level of the foundation in its depressed position. The shafts were sunk below the coupled columns on the westerly side. These shafts were first poured to the height of some 3 feet below the bottom of the footing when jacks were placed on the shaft and put under pressure until the shaft was sunk to such a point that it would go no further and the building began to rise. Then these jacks were removed and the remainder of the concrete poured. At the present time two of these shafts have been sunk successfully and the third is fast nearing completion. There is but one more to be sunk on the western side.

"The next thing that we propose to do is to sink five other shafts in the middle of the easterly span, placing on these shafts steel girders that will run from the easterly foundation across the central foundation and allow the building to settle to a level position on these girders. This set-

tlement will be aided by the use of a water jet and the shores against the westerly side—that is, the westerly side will remain at its present height and will act as a hinge around which the building will lower toward the east.

"It is then the intention to raise the floors on the first story to the proper height with reference to the sidewalk.

"This is briefly the proposed scheme. During the progress of the work so far the building has taken an increased settlement of about 2 inches and the cracks have, in consequence, opened to some degree.

"It is much too early to prophesy any success for the scheme. In fact, the owner has been warned that at any stage of the work the condition of the building may not justify the outlay of further money. The whole operation may be looked upon as a hazard with the chances probably from 5 to 10 to 1 against success.

"The character of the concrete work in the building is not good; and in places that have been investigated it is found that the steel was not placed in the proper manner; in fact, in one instance the steel in the girder does not run into the column and stops somewhere about 6 inches away from the junction. If this is typical of the work, of course, success is impossible, because the stiffness of the connections is what we will have to rely upon to straighten the building."

* * *

Colonial Woodwork

IT is a fad for lovers of antiques to visit the yards of dealers in second-hand building material, for valuable finds are sometimes made. Old mahogany doors, Colonial mantels, hand wrought iron posts, garden embellishments and sometimes chairs of ancient pattern come to light and are quickly snapped up by artisans or collectors.

To send Colonial mantels to New England and hand wrought ironwork to Virginia may seem like carrying coals to Newcastle, says The New York Sun, but according to the dealers, orders for such articles are frequently received from regions which have long been considered fountainheads of Colonial relics.

"That mantel there," added a dealer pointing to an old Colonial piece, the fine lines of which not even the grime and dust of the storehouse could quite obliterate, "is just about to be shipped to a town near Boston for the country place of a man living in the Hub. I have standing orders from customers in Connecticut, Massachusetts, New Jersey and Pennsylvania, as well as Virginia and New York State, who are on the lookout for bargains in old woodwork or curios of various sorts.

"We don't begin to get the fine old things now we used to get when I first went into the business, but of course there wasn't the same demand for them then, and they didn't bring the prices they do now. That mantel with the Corinthian columns and the Greek key design will sell for $75, and it's cheap at that, for the lines and proportions are perfect. It's as fine a type of Colonial mantel as you will run across; the wood is in prime condition and the design is a classic one. Old mantels range anywhere from $25 to $150.

"One of the products of this business in demand by wood carvers is old oak. In the early days when wood was more plentiful than it is now, oak was the staple material for builders and cabinet-makers. In many of the old New York houses the beams, joists and entire underpinning of the buildings were of oak."

How Much Will It Cost Me to Build?

By WILLIAM A. NEWMAN, Architect.

W. A. Newman, Architect

THIS is a question so often and earnestly asked that it is a matter of daily occurrence with the busy architect to devote a considerable portion of his time discussing it. Indeed, it is so important a subject that volumes have been written and many systems and rules devised to properly answer the question. To correctly estimate these costs requires considerable time, that the unit quantities may be computed, and the exercise of much care and experience.

An approximate estimate can be made with the aid of simple data, which has often served to encourage a hesitating client to proceed with improvements,—the probable cost of which he had but a faint idea.

Such data, however, should be used with care as the market value of many building materials is now rising, and these increases must be taken into account. It should be borne in mind that the prices named are for average work in San Francisco, an allowance should be made for special conditions.

Average frame dwellings or apartments will cost, per room	from	$400.00	to	$ 700.00
Average Class C apartments, per room	"	600.00	"	900.00
Average Class B apartments and hotels, per room	"	700.00	"	1000.00
Average Class A office bldgs. and hotels, per room	"	800.00	"	1100.00
Frame stores, per sq. ft. of area occupied	"	1.50	"	2.00

Buildings estimated on the basis of cubic contents taken from outer wall lines and from basement floor to roof cost as follows:

Average frame dwellings or flats, per cu. ft.	from	$ .14	to	$ .24
Mill construction warehouses or garages	"	.06	"	.12
Class C warehouses and lofts	"	.08	"	.16
" C churches	"	.25	"	.45
" C schools and apartments	"	.20	"	.30
" B garages and lofts	"	.08	"	.18
" B reinforced concrete hotels and apartments	"	.22	"	.32
" A office buildings and hotels, plain	"	.25	"	.35
" A office buildings, ornamental stone and T. C.	"	.32	"	.42
Fireproof government buildings, small plain	"	.30	"	.50
Fireproof government buildings ornamental	"	.50	"	1.00

The most frequent requests are for prices on the following

Architect's services	6%	to	10%	of cost of bldg.
Contractor's surety bond	½	of	1%	of contract price
Excavation: Sand or loam, short haul	50	cents	cu. yd.,	up
Brickwork: In place in wall, per M				
Common brickwork	$17.00	to	$ 20.00	
Pressed brick	40.00	"	60.00	
Enameled or glazed brick	80.00	"	100.00	

Lakeshore Apartments, Oakland, California
W. A. Newman, Architect

Concrete. In place, per cu. ft.:		
Foundations	$ .30 to	$ .35
Ratproofing	.07 "	.10
Reinforced floors	.35 "	.45
Terra Cotta: In place, per sq. ft.:		
Structural and ornamental	from .35 up	
Fireproofing 4"	.15 "	.17
Structural Steelwork, in place, per ton	70.00 "	90.00
Lumber and Millwork prices are best obtained from dealer.		
Labor on frame for dwellings and flats will average 40% to 50% of the cost of the material.		
Stonework:		
Granite curb, per lineal ft.	$ 1.10 to	$ 1.50
Granite ashlar, in place, per cu. ft.	3.00 "	4.00
Sandstone ashlar, in place, per cu. ft	2.00 "	3.00
Marble wainscot, plain, per sq. ft	1.00 "	1.50
Marble wainscot fancy, per sq ft	1.50 "	3.00
Roofing, in place, per square of 100 sq. ft:		
Slate	15.00 "	18.00
T C tile	20.00 "	25.00
Five-ply felt and gravel	5.00 "	5.50
Shingles	5.00 "	6.00

Good plumbing for hotels and apartments will average 10% of the cost of the building.		
Hardware will cost 2% of the cost of the building for first class.		
Terrazzo floor and wainscot, in place, per sq. ft.	.35 "	.40
Terrazzo steps and wainscot, in place, per lineal ft.	1.00 "	1.25
Plastering:		
Cement plaster on metal lath, per sq. yd.	1.00 "	1.35
Hardwall plaster on metal lath, per sq. yd.	.60 "	.65
Hardwall plaster on wood lath, per sq. yd.	.35 "	.40
Heating:		
Furnace installation for hot air heating approximately 5% of the cost of building; steam heating 8%, and for hot water heating 10%.		
Painting:		
Average 2 coats lead and oil, per sq. yd.	.19 "	.21
Average 3 coats lead and oil, per sq. yd.	.25 "	.27
Average 3 coats stain, shellac and varnish.	.30 "	.32
Glass:		
Plate, small sizes, per sq. ft.	.60 "	.65
21 oz., average sizes	.11 "	.12
Hardwood floors, per sq. ft., finished complete	.22 "	.30

* * *

Bungalows: How Not to Build Them

THE Harvard Lampoon recently printed a facetious description and plan of a California bungalow that serves to show how the problems of building and running the home, as well as the vagaries of certain bungalow advertisements, are not as alien to the care-free college student as might be generally supposed. The floor plan, for instance, shows a large servants' coatroom, butlers' pantry, servants' ballroom; and, somewhat smaller, the servants' gymnasium, boudoir and wine-cellar. Off in a back corner is a very small apartment allotted to the owner. The description runs thus:

"The most distinctive feature of this charming bungalow is a roof. The immense hangover of it and the broad slant towards the top are distinctly original, and give an air of magnificence to a house that is essentially simple and inexpensive. The airy little tower, which is an ideal woodcloset (being off the damp ground), relieves the squat lines and adds a subtle effect of height. The construction throughout is of reinforced concrete, except this roof, which is of Delft tiles overlaid with a waterproofing layer of 'Sanitissue.'

"The interior is simple, convenient, comfortable. Large windows (made of glass!) admit plenty of air, and are so arranged that they can be seen both from the inside and the outside of the house. All partitions have been omitted, giving a striking air of freedom and breadth to the various rooms. A rococo built-in fireplace in the middle of a room adds an intimate touch, and is ingeniously constructed so as to serve as a china closet during the daytime. As there are only two floors to the bungalow no staircase is needed, and the space designed for one is filled instead by a Victrola in a concrete case designed specially for the place. A lively frieze running round the room (just under the ceiling) gives a delightful impression of open-air life; and truly, inside the house, with its great windows and broad expanses, one is almost convinced that he is not."

This is all very amusing, but hardly more so than an advertisement before us which describes some "beautiful Moorish bungalows with Colonial fireplaces, and with interiors that offer unusual opportunity for interior decoration." It sounds like a very appalling medley.

The Pacific Coast—Past, Present and Future

By F. H. GLIDDEN.*

F. H. Glidden

IT is just twenty years since the writer of this article visited for the first time wonderful California. I say wonderful, for my vivid recollection of "Forty-nine" brings to mind reminiscences of that sparsely known country prior to that date. Many of my schoolboy friends and relatives too, were stricken with the "golden fever" and ventured to seek their fortunes, some by overland route and others via Cape Horn. A few of them were successful and have left to posterity their names and records of good citizenship and men of deeds; others fell by the wayside from hardship of the rugged life.

One incident of my first visit to San Francisco was to hear the story of the desertion by their crews of several of the old-time ships that conveyed the gold-seekers to the Golden Gate. The vessels were left to be condemned for the want of seamen to navigate them. One of these was the Oscola, built by the Gliddens of Newcastle, Me. Quite a number of these noble hulks found their graves in Market street, then the water front. San Francisco at that time was quite unimportant. Today I might say it is the marvel city, having passed through earthquake and fire, and because of that spirit of "Forty-nine," she, Phoenix-like, has risen again to the majesty of a city of first rank and beauty.

What more can be said in her praise but to contemplate her future as well as other prosperous cities that border the Pacific Coast and beautify the interior of a sun-favored and flowery realm?

It has been my privilege and pleasure to spend many weeks in California, and I am quite familiar with her coast line and inlands, and from my own observations and from information gathered from various sources, I predict the "Star of Empire" will continue gloriously onward under the same influence that gave to the world the light and radiance of that "Star in the East" which has come down through the ages in good will toward men.

My visit to San Francisco first referred to was of a business nature and pleasure combined, and both objects were well repaid. The seed of the former was cast upon fertile soil and has increased a thousand fold. The mutual business relations that have since existed through personal contact with men of business sagacity have assured confidence in fair and honorable dealing the feature that must obtain to put any house in right with the wide-awake business merchant of the thrifty West beyond the Rocky Mountains. Enterprise each year brings the East and the West nearer together. What was once an almost undreamed of undertaking was one of three prophecies of Horace Greeley, published in the Atlantic Monthly in 1842. If my memory serves me right, he said he expected to see the Atlantic and Pacific connected by bonds of steel, Europe and the United States connected by telegraph cable, and a bureau established giv-

*President the Glidden Varnish Company, Cleveland, Ohio

Plant of the Glidden Varnish Company

ing weather conditions some days in advance. He lived to see them accomplished, but did he have a conception of the vast extent of these attainments? The first of the predictions so well accomplished has been the sequel to the marvelous advancement of the Pacific Coast and the great Northwest in commerce and agriculture—where the border is crossed in friendly relations with the prosperous British dominion. Finally, "Where the mountains are made low, the valleys are filled and the ways made straight," it would seem the Divine injunction is being carried out, I trust both in the letter and spirit of the law.

My prediction is that the Exposition at San Francisco and the opening of the great Panama Canal will bring unbounded prosperity to the Pacific Coast and the great Northwest that will march onward indefinitely.

F. H. GLIDDEN.

Cleveland, Ohio, January, 1913.

* * *

A Tribute to Mr. Glidden

To the Editor.—We have had the pleasure of knowing Mr. Glidden for some years, and have had relations with his company since 1903—certainly a long enough period to know whether or not as a jobbing house we are in good hands. In the time named we have never had a dispute with this company. They have always fulfilled their contracts to the letter; have furnished us goods that have been entirely acceptable to our trade, and have given us service second to none.

Considering the good opinion we desire to have of all our Eastern friends we believe that such a letter as Mr. Glidden has written should be pleasant reading to those interested in your wide-awake publication.

Yours very truly,

WHITTIER-COBURN CO.
W. B. Weir, Prest.

San Francisco, March, 1913.

Job No. _____ Building _____ Location _____

Date Contract _____ Date Started _____ Date Finished _____

Original Contract			
Extras		NET CONTRACT	
Total			
Deductions			
Tile			
Plaster			
Tools			
Cleaning Rubbish			
Sundry Material			
Freight			
Cartage			
Labor			
Misc'l Expenses		TOTAL EXPENSE	NET PROFIT

	ESTIMATED			ACTUAL			DIFFERENCE		
	QUANTITY	PRICE	AMOUNT	QUANTITY	PRICE	AMOUNT	QUANTITY	PRICE	AMOUNT
1"									
2"									
4"									
6"									
8"									

COST PER SQUARE FOOT

	TILE	FREIGHT	CARTAGE	PLASTER	MISC'L	TOTAL
1"						
2"						
4"						
6"						
8"						

Total Square Feet _____ Cost Per Foot _____ Profit Per Foot _____

Cost Record form for Contractors

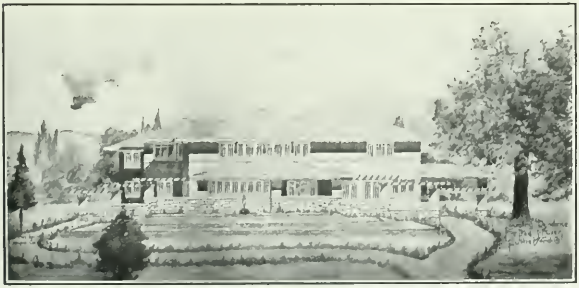
Keeping Costs in Building Construction

THE form reproduced herewith shows the method adopted by one firm of contractors for keeping a record for each separate job. It will be noticed from the details of the form that this particular arrangement was intended to take care of work in the application of fireproofing tile and incidental plastering, but the principles shown here can, of course, be applied to any particular department of building construction.

The form is desirable in that it records what the estimated costs were, and against them what the actual costs were, showing the factor of error, which is very useful in making a better guess on the next job of the same sort. The form is issued in triplicate, the first copy going to the sales department, the second being attached to the original estimate, and the third being filed to the name of the customer. The second form is therefore available when the job is completed for filing by subject so as to be readily available in figuring another job of that general class.—Contract Record.

Norman F. Marsh, Los Angeles, Architect

Country Residence of Mr. J. H. Wheeler, near St. Helena, California
L. M. Turton, Architect



Country Residence of Mr. Fred S. Ewer, St. Helena, California
L. M. Turton, Architect

Skyline and City Architecture

FEW things receive so little attention from the modern architect as the effect of his building on the skyline of the town. In his country house and cottage work he is careful enough, and groups his gables or hipped roofs and chimneys with great thoughtfulness, well aware that from a short distance they are probably all that will appear above the enclosing garden and tree-planting. But in a town façade he thinks he is quit of his responsibility to the world with a clear cornice line, or at most an unimpeachable attic. Beyond that he would appear to leave his building to take care of itself, or, rather, to the draughtsman who is working out the keeper's quarters and the chimney flues. Of course, this is but one of the numerous results of the prevalent lack of communistic feeling among latter-day town builders—the same spirit which has been accountable for the absence of town planning in the modern city and the medley of our groups of public buildings. For as regards his individual building the architect is probably right; the cornice or attic is as high a level as the eye of the passerby can reach, and it is only when seen at a distance and in conjunction with other buildings that its skyline comes into play, more particularly if the site of the town is undulating, giving occasional vantage points from which a view can be obtained. Then does the banefulness of the purely individualistic treatment become apparent, and the neglected roof and irregular levels of each building produce the typical uninteresting and formless town picture with which we are so thoroughly acquainted.

It is instructive to observe the care that is being taken in connection with the large area which is now undergoing reconstruction at Brussels. This is situated just below the plateau on which the Palace and famous Parc are placed, and from which charming glimpses may be had over the picturesque lower town. In the rebuilding, the small old houses are being replaced by large commercial buildings, which rise with their many stories to the level of the plateau itself. But the municipality and that admirable watch-dog body the Comité de vieux Bruxelles are not idle; the best views, such as those which include the tower of the Hôtel de Ville, are to be preserved by limiting the height and outline of buildings; and at one place near the Place Royale, whence over a balustrade a distant view was obtained, it is proposed to erect a screen wall in order that the serene repose of the eighteenth-century quarters may not be disturbed by the mushroom growths which are springing up from the hot-bed of the lower city.

If anyone is in search of object lessons of the result of the want of study of skyline, reference need only be made to the recent water front of Liverpool, the new sides to the Champs de Mars at Paris, and Kingsway in London.

It is a singular and melancholy fact that Paris, which has stood before the world as the example and precept of street line and skyline, which successfully prevented the destruction of one of her finest city pictures—the view of the Ile de la Cité from the Pont des Arts—should have handed over her historic Champs de Mars to the unbridled dominion of the speculative architect and speculative builder. The skyline round this great space is ruined forever. The Parisians have learned their lesson and bitterly regret their mistake.—London Architectural Review.

[illegible] Institute of Architects — *C. H. Buchanan, Architect*

American Institute of Architects

Official Doings of San Francisco Chapter

[NOW NORTHERN CALIFORNIA CHAPTER]

PRESIDENT - - - - - - GEO. B. McDOUGALL
VICE-PRESIDENT - - - - - EDGAR A. MATHEWS
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Special Committee on Education (in charge of this Department)

C. P. WEEKS SMITH O'BRIEN W. A. NEWMAN L. B. DUTTON

Report of the Committee on Education of San Francisco Chapter

THIS committee has had several meetings at the first of which it was decided to divide the committee into the following departments, one assigned to each of the members:

Department of Lectures—Mr. Smith O'Brien.
Department of Publicity—Mr. W. A. Newman.
Department of Law—Mr. C. P. Weeks.
Department of Ethics—Mr. L. B. Dutton.

DEPARTMENT OF LECTURES—Under this head it is suggested by the committee to make arrangements for a lecture or paper at each regular meeting of the Chapter.

The lecture or paper not to occupy more than one-half hour in its delivery.

Members of the Chapter will be asked to prepare a short talk or paper on experiences that will prove interesting and instructive to their brother architects, and it will be considered obligatory on those asked to respond.

Prominent structural, heating and ventilating, electrical and sanitary engineers will also be asked to contribute in a similar manner.

Papers and talks by experts in branches of the Arts and Crafts allied to Architecture will also prove interesting and instructive.

All members of the Chapter are asked to co-operate in this matter of lectures and papers.

Names of persons representing the above activities who can and will contribute will be gladly received by the committee.

DEPARTMENT OF PUBLICITY—Under this head it is suggested by the committee that articles be published from time to time in the public press.

The Architect and Engineer has requested that it be made the official organ of the Chapter and it has agreed to devote monthly suitable space for such articles as may be furnished.

This committee proposes to publish notices of competitions and list of members taking part.

Lists to apply both to the competitions that have been approved by the Committee on Competitions and those that have not, also a series of articles on: Architectural Practice; Schedule of Charges; Cost of Running an Architect's Office, and on Ethics, answering such questions as the following:

What is an architect?

Why there is a law to protect the public from imposition.

What should the owner require of his architect?

What is he entitled to?

How each member can assist in promoting the artistic, scientific and practical efficiency of the profession.

Why does the American Institute of Architects look with disfavor upon competitions?

When are competitions a failure?

When is an architect unnecessary?

What is the responsibility of the citizen to the community for the erection of creditable buildings?

How it pays to have such buildings in a community.

How the owner loses when the architect is underpaid.

Is it ever safe to pay the architect less than 6 per cent?

Where the money goes in an architect's office.

How to eliminate the evil of "sketches free."

What is the American Institute of Architects?

Is the architect being crowded out by the general contractor? Reasons and remedies?

Is the present schedule of charges the correct method of paying an architect?

DEPARTMENT OF LAW—This committee proposes to obtain a brief from an attorney well versed in building law respecting the architect's legal responsibilities; to draw some form of architect's contract; and we hope to be able to suggest some way whereby the Chapter can protect its members from unscrupulous clients who refuse to pay for services rendered. We shall also from time to time give reviews of cases in courts where architects are involved or are called in as experts, in this way, keeping the Chapter members informed as to their duties and dangers.

DEPARTMENT OF ETHICS—Under this heading the committee desires to have discussed any subject that will educate along ethical lines; it should be interesting and instructive to have the opinions of architects on the following topics:

To what extent can an architect solicit work from an owner where another architect has already been promised the work?

What should be the attitude of architects to their fellows? Examples. If another architect has helped you, let the committee hear of it. We want to know him.

What action should the Chapter take with members who violate the "Code of Ethics?"

To what extent are we bound by the schedule of minimum charges?

What should be done with "Christmas presents" from contractors and material men?

Your committee suggests that Chapter meetings be enlivened by discussions on the above and kindred topics so that the younger members may be instructed by such discussions and decisions as well as by the example of the older members.

This committee recognizes that all architectural work is competitive; that there is a constant strife being waged; but it believes that the strife can be waged on the square, and it therefore proposes to point out by example the right way and the wrong way for an architect to act.

This committee desires that cases of unethical practice and members taking part in unauthorized competitions be reported to it and it will make recommendations to the Board of Directors for action.

The object of all of this work is to give the members a better idea of their obligations and responsibilities to their fellow members and the public and to better inform the public as to their obligations to the architects; the benefit they derive from employing them; the architect's difficulties, expenses and responsibilities and consequent justification for charging the commission he is obliged to charge.

And also to create a greater interest in the Chapters' meetings by lectures and papers on live topics, so that the membership may increase and the attendance be enlarged.

Along this line the committee has been attempting to find more permanent quarters, believing that a permanent home will create a more friendly and helpful spirit.

(Signed) COMMITTEE ON EDUCATION:

C. P. WEEKS,
SMITH O'BRIEN,
W. A. NEWMAN,
L. B. DUTTON

Serious and Humorous Paragraphs From the Report of the Publicity Committee

By T. J. WELSH, Chairman.

We are informed that quite a number of bills have been introduced in the Assembly calling for new buildings costing from $10,000 to $250,000. Any member of the Chapter can write and obtain copies of these bills, and get to work for a job.

* * *

We also report that the United States Government has published three bulletins on the "Smoke Nuisance." The members of this Chapter will find interesting reading matter in same. Copies can be obtained free of charge by writing to the Department of the Interior, Washington, and ask for Bulletins 39 and 40 and Bulletin 49, entitled "City Smoke Ordinances" and "Smoke Abatement." Note.—San Francisco merchants are now complaining about smoke.

* * *

Your committee would respectfully ask the wives of the members of this Chapter to save the oyster shells for an income. Here is the reason:

Sharp sand and gravel are not the only components of good concrete. A five-story concrete building, the concrete being made of oyster shell from the reefs of Galveston Bay, has been erected at Galveston, Texas. The owners of the building and its constructors, Nic. Bohn and G. Tietze, claim this material is better and cheaper than concrete made with gravel. Shell concrete built into a wall 3 feet high and 336 feet long in 1882 withstood the severe test of fire and water and is today as sound as when built. It is estimated that the shells of 5,896,000 oysters are imbedded in the walls of this building. This is said to be the only building of its kind in the world.

* * *

Wonders will never cease. Hiram Maxim, now 73 years old, is still working. His son is now working on the problem, "Death to noise." That he may succeed we know is the earnest wish of every member of this Chapter.

* * *

The following question was asked the Committee on Publicity: "DO ARCHITECTS READ?" We now with great respect refer this question to the Committee on Education. Knowing the personnel of this committee, we know they will revel in this subject, and be equal to the task. Might we further suggest that they give us a paper on how to remodel, heat, light and paint the many houses of San Francisco that now carry the "To Let" signs on them, and educate and bring joy and happiness to the many real estate owners of this city, who, to their sorrow, employed the designer instead of the honest and competent architect. At an auction sale held a few days ago bidders refused to bid on or purchase a piece of property because the building on same was not constructed on rational lines.

* * *

Your Committee on Publicity, consisting of Messrs. Schroepfer, Ross, Stone and Welsh, having at heart the betterment of the conditions of the members of this Chapter, speaking as a unit and scientifically, make the open statement that the members of this Chapter eat too much. We say to them, "Quit eating and live on air:" viz., the air we find in the fields and the ocean shore. Don't eat; live on fresh air and water. Plenty of fresh air. One teaspoonful of water every three days.

The time is about to be, says Dr. J. B. Rulison, of Toledo, Ohio, when man will cease to eat; the stomach will roll itself up into a nice little ball and go to sleep, and man will enjoy the proper and natural mode of living on water and air.

Can you imagine this state of affairs, *O you architectural dyspeptic!* and what a Paradise the old earth would be, *now, wouldn't it?* Humanity is food drunk and kicking about their floating kidneys and bad livers, brought on by over-eating. Dr. Rulison may be right; he is right to a certain extent, we know. People eat more than it is necessary for them to eat. The poor stomach is the most abused organ in the whole body. In olden times people used to fast as a mode of restoration of health. Athletes sometimes live on water alone for seven or eight days before a great field day. They lose no strength, but decrease their weight, and are in the very pink of condition when the event takes place.

Your committee thinks that the reason why so many laws are framed in the State Legislature affecting the architect, and are called indefinite and indeterminate, and front elevations made by the architect are sometimes termed aberrations, is because the work and conceptions were conceived when the stomach was out of order.

All of which is most respectfully submitted.

University of Utah "U" on Mountain Side—Done in Concrete

A College Shrine in Concrete

A UNIQUE piece of work in concrete is the official initial of the University of Utah—a gigantic letter "U" on the mountainside northeast of Salt Lake City, above the campus of the state institution. The letter is said to be the largest initial in the world done in cement. In Berkeley, California, there is a large letter "C" on the Berkeley hills, back of the University of California, but it is not as large as the Utah shrine. On clear days it is said the "U" can be seen a distance of 20 miles. To tourists entering Salt Lake from the south it is one of the first objects of interest.

As originally constructed in the spring of 1905, the "U" was made of lime obtained from an abandoned kiln in the vicinity. Energetic sophomores of the University having placed their class numerals 40 feet high on the mountainside, their collegiate enemies, the freshmen, felt obligated to erase the numerals and replace them with the freshman symbol. Then followed one of the most vigorous class fights that have marked the history of the Utah school. Day and night, for nearly a week, the contest went on intermittently, and each morning residents of Salt Lake would go out upon their porches to see which class had succeeded in leaving its mark upon the mountain, says Cement Age.

Finally an armistice was arranged, in the course of which a long-headed student suggested that the combatants combine with the upper classmen and construct a mighty "U" as an emblem of loyalty to the whole school. Accordingly, on an appropriate morning, the male contingent of the student body assembled and formed a bucket line from the old lime kiln to the site of the proposed letter, 1,000 feet distant, where some of the engineering students had marked an outline. The "U" that emerged from the hillside was not a perfect one, but it was there, dazzling white against the purple gray of the hills. By the time the spring of 1906 came the "U" was a sorry looking affair. The snows and rains had washed most of the lime away so that it needed refilling. Arrangements were made, therefore, to replace

the lime with concrete. The old initial was destroyed, excavations were made and forms put in for a concrete "U" 4 inches deep.

The letter as it was constructed then and as it now stands, measures 100 feet across the top bars and is 100 feet high. The bars are 20′ x 45′, with a space of 10 feet between them. The sides are 15 feet wide and the bottom 20 feet, making a total area of 4,750 sq. ft. Thirty-seven loads of sand, 40 of gravel, and 12 of water, together with 200 sacks of cement, were used in the construction. There are 1,583 cu. ft. of concrete in the letter, weighing about 120 tons.

* * *

Tallest Concrete Chimney on the Pacific Coast

THE largest reinforced concrete chimney on the Pacific Coast is being erected at its smelting works near Martinez, Contra Costa County, California, by the Mountain Copper Company. The work is being done by the General Concrete Construction Company of Chicago, Illinois.

The chimney will be 225 feet in height above the foundation, which will be 75 feet above sea level, making the total height of the stack above sea level, 300 feet. The present iron chimney which has been doing service at the works since the plant was established is 225 feet in height with the foundation 50 feet above sea level. The new stack will be erected on the summit of the knoll immediately west of the present stack and will be built solely of reinforced concrete. The greatest outside diameter will be 19.4 feet and the interior diameter at the top of the stack, which will taper slightly from the foundation, will be 12 feet. The stack at the foundation will have a circumference of 35 feet and will be sunk 5 feet 6 inches below grade. The interior of the stack is to be lined with red brick and acid-proof mortar and running up the outside will be a steel ladder for use in case of repairs or emergency work.

The builders guarantee the chimney against disaster for a period of five years. The great stack will withstand a wind velocity of 125 miles per hour and an interior temperature of 1,000 degrees Fahrenheit. The contract calls for the completion of the work within 120 days and to fulfill the terms of the contract the builders put up a bond of $10,000.

The stack will be built by stages, an estimated five feet per day being added. Steel forms will be used in the building which will be raised as required and which will also leave a smooth outer surface which will be washed down making a perfectly white chimney.

The main object in building the new chimney is to secure a greater draft for the furnaces, the need of which has long been felt and which it was aimed to secure last summer when plans were adopted for adding to the present stack. In addition to affording a better draft the new chimney will permit the passage of a greater amount of air which will dilute the gases from the furnaces even farther than at present.

* * *

The Theory of Advertising

"The theory of advertising is just this: Every person who has something to sell, whether that something be service or merchandise, cannot do better than to make his wants known in the simplest possible way, with honest persuasion, to those who might become purchasers. The only man who can afford to avoid advertising is he who has nothing whatever for sale, who desires no information on any subject, and is in need of nothing. This limitation almost defines a dead one."

The Great Woolworth Building

By SAMUEL ARNOLD, Berkeley, Cal.

The Aryan builders built their babble
tower high,
The Trojans their mighty walls of Troy.
In Grecian Isles, stately columned tem-
ples stand;
In Egypt the eternal pyramids pierce
the sky.
Venetian palace marbled halls so grand
And the colossal domes of ancient Rome
With wonder fill the eye.
Cathedral towers, and spires of Gothic
lands
Were built with subtle mighty hands,
And Eiffel's modern wonder tower in
magic splendor stands.
Oh, Aryan! Egypt! Trojan! Greek!
Roman! Gaul!
They builded well, and strong, and
stately, true and tall;
But our modern Gilbert, in his Wool-
worth, builded best of all.

February 15th, 1913.

San Francisco General Contractors Association in its New Home

By WM. E. HAGUE

ON the evening of Saturday, March 1, 1913, the General Contractors Association held an Installation Banquet to celebrate the occupancy of its new headquarters. Some 350 members and guests were present for this occasion, and it was unanimously pronounced the most successful and representative banquet ever held in the history of the building industry of San Francisco. The impressive splendor of the main auditorium of the new headquarters provided a setting second to none in this city.

Among the speakers were the following: Mayor James Rolph, Jr., "San Francisco and its Future Prosperity"; Mr. Charles A. Vogelsang, representing Mr. Chas. C. Moore, President of the Panama-Pacific International Exposition Company, "Our World's Fair of 1915"; Mr. W. T. Sesnon, President of the Chamber of Commerce of San Francisco, "Our Commercial Future"; Mr. A. C. Rulofson, President of the Home Industry League of California, "Home Industry"; Mr. Geo. B. McDougall, President of the San Francisco Chapter American Institute of Architects, "Relation of Architect and Builder"; Mr. James McNab, Vice-Chairman of the Building and Grounds Committee, Panama-Pacific International Exposition Company, "Building an Exposition"; Mr. Paul Bancroft, Chairman of the Public Buildings Committee of the Board of Supervisors, "Public Buildings"; Mr. F. H. Masow, Past-President of the General Contractors Association, "History of the Organization"; Mr. R. B. Moore, President of the Building Trades Employers' Association, Toast to the "Success of the Building Industry in its New Headquarters."

Mr. Chas. A. Day, President of the Association, was toastmaster of the evening, and spoke on the aims and objects of the organization, and its intent to build up the standing of the builders and contractors in all lines engaged in the erecting of the magnificent buildings which have already made this city famous the world over for the splendid reconstruction work since 1906.

President Day, in touching upon labor conditions, advised that the association had had few misunderstandings with the Building Trades' Council, and that all controversies had been settled amicably and the dignity of the employer maintained at all times.

Mayor James Rolph, Jr., was listened to with interest, and forcibly placed before those present the fact that the two great problems before this city at this time were the questions of adequate water supply and proper transportation.

All the speakers were listened to attentively, and the evening was undoubtedly an enjoyable one to all present. The fact that the contractors were celebrating the occupancy of what is admitted to be the finest headquarters for builders in this country, caused a spirit of felicitation which the importance of the event thoroughly merited.

* * *

The architects of San Francisco are cordially invited to make themselves at home in the new headquarters, and any and all of them will at all times be considered welcome guests of the association. Much credit is due to Mr George W. Kelham, the architect, for his work in designing an auditorium and specifying a finish such as the new headquarters possess. They are beautiful, spacious, well lighted and well equipped. The association has spared no expense in furnishing them with the best of furniture throughout, and they are a practical proof to the building industry at large

of what can be accomplished through the means of an organization properly formed and well managed. For years past the building industry of this city has never been represented by headquarters commensurate with the importance of the industry, which is really one second to none in this city. If you take the building industry from this town, owing to the lack of manufacturing interests, there would be little left to provide a living for its inhabitants.

A new and much needed feature proposed by the association in its new headquarters is a material men's permanent exhibit, which it is proposed to install in the large, well lighted basement underneath the main auditorium. This is an ideal location for the purpose, and such an exhibit would be no experiment. It has been successfully tried in the East, and can undoubtedly be made a success in this city. For the past several weeks architects have been ringing up the Secretary inquiring what was going to be done in the matter of a material men's exhibit, stating that they were anxious to see a practical exhibit of all lines of material used in erecting a building gathered together in some convenient place. The association proposes to satisfy this demand, provided the material men, dealers in machinery, safe and lock dealers, etc., will give the proposition the support required to properly finance and take care of the enterprise.

At the stockholders' annual meeting held on February 13, 1913, the following general contractors were elected to serve as the Board of Directors for the ensuing year: A. H. Bergstrom, John Biller, C. A. Day, Grant Fee, Edward Ginley, Chas. W. Gompertz, Frank P. Lansing, P. J. Lynch, Ralph McLeran, F. H. Masow and Chas. Wright. During this month the new Board will meet and elect the new officers of the corporation.

* * *

Contract Made by General Contractor Not Binding on Sub-Contractor

IT is of interest for general contractors who are sub-letting work to note that in the eyes of the law the sub-contractor is not bound by the contract that the general contractor may make with the architect or owner or by any other such arrangement. At Osgoode Hall, Toronto, recently, there was heard a case in which the work involved was shown distinctly on the plans and marked but not properly specified, except for the general clause which reads: "All work not shown but specified, and vice versa, to be carried out, etc." This clause does not amount to the paper upon which it is written for the reason that it does not cover any extra work, but means anything required in the way of material and to complete the work as understood, specified and shown. This clause not infrequently serves as a cloak for the architect, and contractors have been intimidated into paying for the designer's omissions with their time and labor. In the case above-mentioned the owner's architect swore that the work in dispute was shown and intended though not specified, but the judge ruled otherwise and the general contractor's only possible chance lies in suing the owners.

The moral is that when a general contractor takes tenders on different trades, he should see that everything is covered, and make just as sound and binding a contract with the man under him as that existing between himself and the architect or owner.—Contract Record.

Presentation of John Fritz Medal to Capt. Robt. W. Hunt

Captain Robert W. Hunt

PACIFIC Coast friends of Capt. Robert W. Hunt will be interested in learning of the ceremonies which marked the recent presentation to Captain Hunt of the John Fritz Medal for 1912, for "his contributions to the early development of the Bessemer process." The presentation of the medal and diploma took place in the presence of a distinguished company in the Engineering Societies Building, New York, on December 5. The ceremonies, while simple, were marked by a display of feeling which showed clearly the esteem of the assembled engineers for the guest of the evening.

The John Fritz Medal, it will be remembered, was established by the professional associates and friends of John Fritz, on Aug. 21, 1902, his eightieth birthday, to perpetnate the memory of his achievements in industrial progress. It is awarded for notable scientific or industrial achievement, without restriction as to nationality or sex. It has previously been awarded to Lord Kelvin, George Westinghouse, Alexander Graham Bell, Thomas Alva Edison, Charles T. Porter, Alfred Noble and Sir William Henry White. The award is made by a board of sixteen members, made up of four representatives each of the four principal national engineering societies, representing the civil, mining, mechanical and electrical engineering professions.

Prof. James F. Kemp, of Columbia University, presided at the presentation, and the principal address, outside of Captain Hunt's address accepting the medal, was delivered by Dr. John A. Brashear, of Pittsburgh. With simple but true eloquence Dr. Brashear briefly sketched the developments in the steel industry and paid a tribute to Captain Hunt, not only for his part in this development, but also for his qualities of character.

The presentation was made by Mr. E. G. Spilsbury, and Dr. Henry S. Drinker, president of Lehigh University, brought a personal message from Mr. Fritz, whose health, Dr. Drinker stated, was slowly improving. Mr. Fritz's message, which he personally signed with his mark, since he is still unable to write, was as follows:

"To My Fellow Members of the Four Societies: I wish to convey to you, through my friend, Dr. Drinker, my very hearty greeting, and to express my great pleasure and satisfaction over the award by your committee of the medal bearing my name to my beloved old friend, Captain Robert W. Hunt. No worthier selection could have been made. He is a man so distinguished, so able, so deservedly prominent in the engineering profession, that there can be no question about the wisdom of your choice.

"I only wish I could be with you tonight, but my physical conditions are not, as yet, such as to permit it. I can, however, thank God for the im-

provement in my strength and health since my operation last spring, and I hope that I still may have the pleasure of meeting with you all on some future occasion."

In accepting the medal Captain Hunt said in part:

"It would be false modesty on my part if I failed to acknowledge the great personal gratification which is given me by the honor you have bestowed upon me. A large part of my pleasure is caused by my knowledge that the reception of the medal by me is gratifying to the grand man in whose honor it was founded and whom, for so many years, I have been privileged to know as my more than friend; my only sad thought being that his ill health keeps him from being personally with us tonight.

"The history of the early days of the Bessemer process is almost, if not really, romantic, and would be impossible under present conditions. Since that time so great progress has been made in chemical and other metallurgical research that what was then almost mysterious is now not only understood but known to be controllable under recognized laws. When we recall that Bessemer himself announced that iron containing more than a trace of phosphorus was unsuitable for his process, and that later analyses of steel made by him and others about that time have given numerous instances of considerably over 0.10 per cent of that element, we can appreciate that the then supposed chemical knowledge was not very accurate. Experience with refractory materials had been very limited, particularly when used in contact with molten metal at high temperatures. Engines to blow air at high pressures and in large volumes were undeveloped. The use of electricity as power was unknown, and many other quick-acting and labor-saving developments have been of subsequent years. . . .

"In accepting the honor of receiving this medal, I feel that I am thereby also acting as the representative of those others who did so much in making early American Bessemer history. Alas, alas, almost all of them have passed to the Great Beyond, and we who are yet here can only cherish and rejoice in the memory of their help and friendship, a priceless heritage."

After the meeting a reception was held to afford an opportunity for the guests to meet Captain Hunt.

Robert Woolston Hunt was born in Fallsington, Buck County, Pa. His father, Dr. Robert A. Hunt, of Trenton, N. J., was a graduate of Princeton College and the University of Pennsylvania; his mother was Martha Lancaster Woolston. He spent several years learning the practical side of iron making in the rolling mills of John Burnish & Company, Pottsville, Pa., later took a course of analytical chemistry in the laboratory of Booth, Garrett & Blair, upon the completion of which he entered the employ of the Cambria Iron Company, Johnstown, Pa., and for them established the first laboratory in America as a direct part of an iron or steel organization.

In April, 1889, he established the bureau of inspection, tests and consultation of Messrs. Robert W. Hunt & Company, with principal offices in Chicago, to which city he removed in the spring of 1889.

In 1883 and again in 1906, he was president of the American Institute of Mining Engineers, and has at different times served in the council of that institute and on the board of managers of the American Society of Mechanical Engineers. He was elected president of the latter society in November, 1890. He is a member of the American Society of Civil Engineers, past-president of the Western Society of Engineers, member of the American Railway Engineering Association, the Canadian Society of Civil Engineers, the Iron and Steel Institute of England, the Institution of Civil Engineers, the Institution of Mechanical Engineers, and a trustee of the Rensselaer Polytechnic Institute of Troy, N. Y. President Roosevelt appointed him a member of the executive committee of the advisory board in relation to structural materials and mineral resources.

PRACTICAL DEVICES that the UP-TO-DATE ARCHITECT SHOULD SPECIFY

In this Department there will be printed from time to time articles dealing with new materials and inventions that appeal to the intelligent builder as desirable from both the practical and money saving standpoints.

Moving Merchandise without Power

Haas Bro[illegible] Wholesale Gr[illegible] San Fran[illegible]

WHETHER it be a law of nature or a work of art, a sentiment or an invention, nothing in this universe exists without a cause. And the study of causes shows the need and value of the product.

The cause of the development of the Haslett spiral chute was the need of a safe and more economical method of delivering general merchandise from the upper floors of the numerous warehouses of The Haslett Warehouse Co. in San Francisco. This company is one of the leading factors in the general merchandise warehouse business of the country. About ten years ago its chief engineer developed the principle and design upon which the spiral chute is now based. There was at that time no thought of developing a manufacturing business—the sole purpose was to make the best possible gravity conveyor for the company's own use.

The experiments then made, plus the subsequent decade of experience of this, the most extensive user of spiral chutes in the world, have resulted in a knowledge of the mechanical principles involved and in the perfecting of a design which give this chute a position in the field of spiral conveyors.

When it became established that The Haslett Company saved fifty per cent or more of the cost of delivering merchandise from its upper floors by means of its chutes,

The C[illegible] Chute

other local warehousemen and jobbers had them installed, and following the fire of 1906, many of the important San Francisco wholesale merchants specified spiral chutes for their new buildings. It soon became necessary to fill orders placed by Eastern firms; a factory was established in Philadelphia and sales offices were opened.

Wenahlen Warehouse [illegible] Pirie, Scott & Co., [illegible]

The secret of this success rests upon the wide range of usefulness afforded by properly utilizing all the natural forces brought into play by means of a perfect mechanical design. This is the only chute which fully embodies the complete solution of the rather complex problems involved.

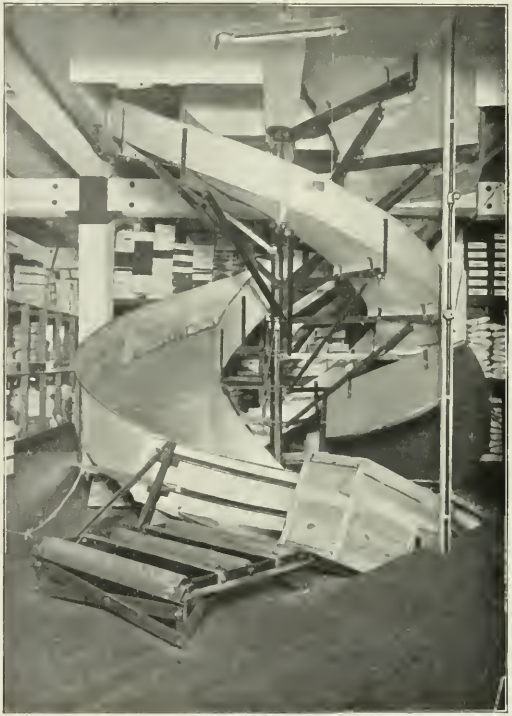
There is in Egypt a famous well cut down perpendicularly hundreds of feet through the living rock. This was built many thousands of years ago. The large shaft was surrounded with a spiral roadway down which were driven teams of oxen used for operating the crude pump at the bottom. The idea of using a spiral plane as a means of making a descent through a limited area is almost older than history.

Most forms of spiral chutes have gone but little beyond this original idea. Gravity has been utilized in a chute of spiral form in order to discharge goods perpendicularly beneath the starting point. It is true that centrifugal force has some effect in all constructions of this kind. High speed causes packages to bear against the outside of the chute, developing a retarding influence on the velocity. Any package upon a plane of spiral form will, if it moves at all, reach the outside. The natural tendency to travel in a straight line effects this. Once at the outer circumference, it must be provided with an angle of descent sufficient to overcome its friction or it will stop.

We have, therefore, three forces or elements to consider—gravity, centrifugal force, and friction. The first two to some extent solved themselves so long ago that none can say when. There is less actual data, however, on friction than on almost any of the natural forces, and the engineer who undertakes to experiment in this field finds little to guide him.

J. H. [illegible] & Co., [illegible] Grocers, San Francisco, Cal.

The Haslett chute is the first to scientifically combine and counter-balance the three forces of gravity, centrifugal force, and friction. A one ounce carton of spice will lie still on a gradient upon which an iron hooped barrel of sugar would accumulate such momentum as



This Chute Cannot Be Used as a Fire Escape for Factory Employés

Showing Fire-door and Smoke Baffle under ceiling.

to smash everything in its path. Yet these extremely different articles travel at practically the same speed in a Haslett chute.

The ideal chute is one in which a feather pillow and an iron ingot would travel at the same speed, and that as slow as possible without danger of stopping. Practicability of construction and the limits of real usefulness curtail the carrying of this principle beyond a certain range, but we know of an instance where some porters, engaging in an argument on the possibilities of the Haslett chute, tested it with five eggs, put in loose at the fifth floor. In descending two struck together, cracking one, the other four being uninjured.*

The bed of the trough of the chute is of concave form and the inner edge or circumference is relatively lower than the outer. The curve of the concave is such that as the outer edge is approached the incline toward it becomes steeper.

This upward slope toward the outside is so graded as to resist perfectly the action of centrifugal force, in carrying packages away from the center. An empty carton placed in the trough at the outer circumference would, on account of its light weight and excessive frictional qualities, lie motionless were it not for the concave slope toward the center. This combined with the gradient of the

Double and Triple Chutes Are Used to Advantage

*This occurred in the wholesale grocery house of Symons Bros. & Co., Saginaw, Mich.

Townsend Street Warehouse,
The Haslett Warehouse Co., San Francisco, Cal.

chute carries it diagonally downward and centerward until the lowest point of the consave is reached. Here it travels so slowly that there is not sufficient centrifugal force to cause it to climb the slope toward the outer edge, and the carton travels at uniform speed at about the lowest point in the trough until it reaches the terminal.

A sack of rice, for instance, having greater specific gravity and less frictional resistance is carried up the slope toward the outer circumference until it reaches the line where its centrifugal force, gravity and friction balance each other, and it rides in this position in the trough at but slightly greater speed than the carton which takes the steeper gradient.

These are the chief reasons why the Haslett chute possesses a range of practical utility far in excess of any other device for delivering goods from upper floors, except a regular power elevator. The buildings shown in this article are all equipped with spiral chutes.

* * *

Stained and Leaded Glass for the House

AMONG the architectural accessories that lend refinement to the dwelling house are to be considered windows of stained and leaded glass. Stained glass, as distinguished from leaded glass, is that material which depends primarily upon color for its effect, whereas leaded glass is dependent upon the lines of lead that form a patterned network to hold the bits of plain glass that compose the whole panel, and rarely contain color at all, although occasionally color is introduced in a slight degree into the decorative scheme.

There are, of course, certain rooms in the house where windows of stained glass will find their most appropriate setting. In the library—that is to say, in the room which is a real library—the stained glass window above the book shelves may form a most appropriate decorative feature, and while admitting a certain amount of light, will obviate the strong crosslights that would otherwise result from the use of windows throughout of clear glass. In some instances small window spaces above the book shelves have been filled by portrait heads in stained glass, and in other instances larger spaces have been occupied by landscape windows worked out with subdued or glowing tints, as good taste determines.

Hall, staircase and music room windows of stained glass are appropriate in the proper setting, and in town houses, where the rear of the dwelling has an unpleasant outlook and yet must give place to the dining room, stained glass windows let in a sufficient amount of light and yet screen the undesirable view. Naturally one does not look for large figure composition in stained glass windows intended for small rooms, for in this, with all other matters under the dictatorship of good taste, consistency must be studied and maintained.—House and Garden.

Among the Architects

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Build Socialist Temple

J Stitt Wilson has announced that he will not be a candidate for re-election as Mayor of Berkeley He will devote his time to promoting a scheme to build a big Socialist temple in San Francisco, the building to be completed in time for the 1915 fair.

Los Angeles Chapter Meeting.

The report of the delegates of Southern California Chapter of the American Institute of Architects on the proceedings of the annual A. I. A. convention which was held in Washington in December was made at the regular monthly meeting of the Chapter in Los Angeles in February.

Messrs. Robert H. Orr and S. Tilden Norton spoke on the business proceedings and transactions of the convention, and Mr. A. C. Martin on the social and educational features and of the benefit to be derived from the association with the leading members of the profession throughout the country. It was particularly gratifying to the members that the Institute committee in its report specifically mentioned and praised the Education and Competition Committees of the Los Angeles Chapter for their good work in convincing two Southern California School Boards to conduct their competitions according to the rules of the American Institute.

In the absence of Mr. J. J. Backus, on account of illness, Mr. John P. Krempel read the report of the Legislation Committee in regard to its success at Sacramento with the new bills introduced in the Legislature for the amendment of the Burnett Law, the repeal of the law of 1872, and the creation of a State Department of Architecture, on which a detailed account will be found in another column.

There was also a general discussion on the subject of absolving an architect from all responsibility and devising ways and means for preventing accidents during the erection of buildings, especially of reinforced concrete construction, which are erected by an owner without the supervision of an architect.

Suit for Damages

Architect Jas. W. McLaughlin, well known in Cincinnati, has sued the Western Union Telegraph Co. in the sum of $2,000 for delay in delivering a telegram. On June 5, 1912, Don McLaughlin wired him from New York to come at once and accept a position as an architect to make plans for a number of homes for a retired contract, for which a salary of $50 per week was offered. The message was not delivered until June 13, being too late for his acceptance, as the offer was only open for two days. The company has failed to reply to his claim for damages, therefore he brings suit

Flower Market

Architect Smith O'Brien has prepared plans for a $60,000 two-story Class C commercial building to be erected on Bush Street near Kearny, for the Macdonough Estate. The entire building has been leased to Japanese for a flower market.

Winners of Sacramento School Competition

Messrs. Shea & Lofquist of San Francisco have been selected as the architects for the new $180,000 school building which is to be erected in Sacramento. Fifty-one sets of competitive plans were submitted by architects from all parts of the state and some from Eastern cities. The competition was carried on under the American Institute Code with Willis Polk & Co. as the architectural advisors. The judges were Arthur Brown, Jr., L. P. Hobart, Jno. Parkinson and two city commissioners. Plans awarded the second prize were submitted by J. J. Donovan of Oakland. The third prize was awarded to Ratcliffe & Simpson and carries a prize of $150. Architects Shea & Lofquist will receive a commission of six per cent of the cost of the building. This is the first of several new school buildings which are to be erected from the money received from a bond issue of $800,000.

The following is a complete list of the competitors:

San Francisco—Samuel Arnold, Wm. H. Armitage, Glenn Allen, John Baur, Coates & Traver, Cunningham & Politeo, F. J. De Longchamps, John A. Ettler, A. Leo Ellis, J. S. Fairweather, W. C. Falch, Edward T. Foulkes, Edward G. Garden, Max Geist, Wm. C. Havs, Havens & Toepke, John Davis Hatch, Ralph Warner Hart, Bernard J. Joseph, Chas. S. Kaiser, Willis C. Lowe, William Mooser, A. Maritzen, William A. Newman, F. A. Neumarkel, A. D. Nicholson, Oser & Appleton, D. J. Paterson, Parker & Kenyon, Loring P. Rixford, Joseph J. Rankin, Righetti & Headman, C. H. Russell, Thomas Smith, Shea & Lofquist (first prize winners), Edward A. Schumacher, N. W. Sexton, Welsh & Carey, Wright, Rushforth & Cahill, A. Lacy Worswick, Ward & Blohme, Chas. Peter Weeks, Wm. H. Weeks, Woollett & Woollett.

Los Angeles—Allison & Allison, Kysor & Biggar, Krucker & Decklar, Norman F. Marsh, Needham & Cline, Alfred F. Rosenheim, Laurence B. Valk, Withey & Davis.

Oakland—J. Henry Boehrer, J. J. Donovan, (second prize winner), Eugene S. Nostrand, Edwin J. Symmes, F. D. Voorhees, Wilson J. Wythe.

Sacramento—W. T. Banker, C. C. Cuff, M. I. Diggs Co., P. J. Herold, R. A. Herold, F. C. Hemmings, E. T. Osborn, Joseph W. Rowell, Seadler & Hoen, Geo. S. Sellon, A. R. Widdowsen.

San Diego—Theo C. Kistner.

Stockton—Joseph Losekann, Stone & Wright.

Berkeley—Ratcliff & Simpson, (third prize winners), Hiram K. Lovell.

Bakersfield—Orville L. Clark

Santa Barbara—Ray & Soule.

Withdrawn—Austin & Pennell, Los Angeles; Reid Brothers, W. D. Shea, San Francisco; Frederick Soderberg, Oakland.

San Francisco Residence

Architect C. J. Colley is preparing plans for a handsome $15,000 residence to be erected in Presidio Terrace, San Francisco for Mrs. Stella M. Warner.

Made Official Organ

March 3rd, 1913.

Architect & Engineer of Cal.,
Monadnock Building,
San Francisco.

Dear Sirs: —

At a meeting of the the San Francisco Chapter, American Institute of Architects, held on February 20th, 1913, the "Architect and Engineer of California" was designated as the official publication of the Chapter.

Yours very truly,

S. F. CHAPTER, A. I. A.
Sylvain Schnaittacher,
Secretary.

World's Fair Notes

The Pacific Telephone and Telegraph Company will make a working exhibit of its system in the Liberal Arts Building at the coming 1915 World's Exposition.

It is planned to have a switchboard and a large number of young ladies engaged in operating the levers and answering the calls that will come in from all parts of the Exposition grounds.

Hundreds of booths and telephones in the various buildings on the Exposition grounds will be handled by the switchboard in the Liberal Arts Building.

Gathering Data on School Buildings and the Men Who Designed Them.

Superintendent of Public Instruction Hyatt of California has invited all the county and city superintendents of the state to co-operate in the preparation of a hand book on school house architecture for use of the school people of California. Each superintendent will prepare photographs, plans and specifications of one or more of his best school buildings. These will be brought before a committee of eminent school architects from different parts of the state, who will pass judgment on the merits and demerits of the various plans submitted.

These plans, with the remarks and criticism of the architects, will be made the basis of a helpful guide book for the use of school boards in future who are about to build houses or improve school property. It should result in raising the standard of public buildings and its effects will become apparent in the future landscape of the state.

Young Men's Institute Building

Architect Will D. Shea will let segregated contracts on the Young Men's Institute building to be erected on Van Ness avenue, San Francisco. The plans are now practically completed. The building will be Class A and will cost in the neighborhood of $175,000. Mr Shea's design was selected by competition.

Personal

Architect C. C Dakin, who was recently granted a certificate to practice architecture by the California State Board for the Northern District, has opened offices at 110 Sutter street, room 1001. Mr. Dakin was formerly located in Berkeley where he designed and superintended the construction of a number of high class residences and bungalows.

Architect G. Alexander Wright of San Francisco has returned from his trip abroad. While in London Mr. Wright was formally received as a member of the Royal Institute of British Architects and was also entertained by the Quantity Surveyors Association, of which society he is an honorary member.

Charles Holloway, Jr., who went south more than a year ago to establish a Los Angeles office for the Roehling Construction Company, has returned to San Francisco, and his wide circle of friends are pleased to see him back. He was very successful in Los Angeles, but the home office missed him. Holloway's place in the south has been taken by A. L. Stuart who was recently in charge of the company's selling campaign in Oregon.

To Restore Mission

J. D. Haar of Hayward, the architect employed by the Native Sons and Native Daughters' Mission San Jose Restoration Committee, has submitted to that organization a plan for the restoration of the remaining adobe walls of the historic building. The plan has been drawn after a careful study of all the old pictures of the Mission, one of which is in the Golden Gate Park Museum in San Francisco

Spokane's New Hotel

The Minneapolis Steel & Machinery Company has secured the structural steel contract on the $2,000,000 Davenport hotel in Spokane. The contract was awarded by the Brayton Engineering Company, which has the contract for the entire structure. The steel contract alone amounts to $150,000.

Goodwin to Build Theater

Newspaper reports are to the effect that Nat C Goodwin is planning to spend a quarter million dollars in the construction of a hotel and theater in San Francisco. A company has already been incorporated composed of Messrs. Goodwin, James M Hardman of Ocean Park, Dick Ferris of Los Angeles and Sid Grauman, manager of the Empress Theater in San Francisco. It is stated that Cunningham & Politeo are to be the architects of the new building, but this report has not been confirmed. It is understood the new company has secured an option on a desirable location.

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As a choice bit of reactionary sentiment, attention is called to the following item which appeared recently in various daily papers:

VENTILATION: DO WE NEED IT?

"Have we ever stopped to think how our ancestors two or three generations back lived and flourished with little or no ventilation in their sleeping apartments? The night air used to be considered a very dreadful menace to health and a sure inducer of colds. Bedrooms were kept closely shut, and yet our ancestors, many of them, were hardier than we and lived to good old ages. Animals burrow in their holes at night, breathing the same air over and over again, while birds and fowls tuck their heads under their wings. Of course, ventilation is absolutely necessary for proper comfort, cleanliness and health, but people have lived on little or none of it for hundreds and thousands of years."

The difficulty in properly answering a statement of this sort is that, in many respects, it is literally true. Cases will readily occur to almost anyone of people living and thriving under conditions of ill-ventilation that are almost unbelievable. It is one of the peculiar features of the heating engineer's work that he must not only meet the technical problems involved in his designs, but must also cater to, or at least play the part of diplomat to those of his clients who hold views more or less similar to those here quoted. A recent speaker has shown, for instance, how the ventilation of the Capitol at Washington has undergone numerous modifications from time to time purely and solely to meet the vagaries of new sets of legislators.

Of course, the sentiments quoted only go to show once more that the exception proves the rule. If it were worth while, formidable statistics could be presented, just to take one disease directly traceable to bad air, to show the ravages of consumption, in country districts especially, where the night air is most feared.

The fact is, concludes the Heating & Ventilating Magazine, that the heating and ventilating profession would lose some of its most

picturesque elements if it were not for the presence of so many "lay experts" to egg it on.

SANITARY DRINKING FOUNTAINS

Along with ornamental lighting standards ranks the ornamental drinking fountain as a means of really practical and useful ornamentation for streets and boulevards, as well as for business districts and parks. Public drinking fountains, however, should be constructed along strictly hygienic and sanitary lines, for what is not conducive to the health, usefulness or comfort of the individual is worthy of little consideration by the municipal official.

Several leading municipalities last year installed a large number of drinking fountains in their business districts, and it can truthfully be stated that these fountains were not only not ornamental, but decidedly unsanitary. These same municipalities now realize their mistake. The fountains were so low in height that it was a common occurrence to see dogs drinking from them. The dogs were not to blame. Fountains to be sanitary should be of sufficient height and the bubblers should be so protected as to be out of their reach. Those fountains with excessive continuous flows are decidedly wasteful and expensive in the long run. A drinking fountain should not only be ornamental, but it should be sanitary, it should have a continuous but not excessive flow in order to keep the bubblers in a clean and sanitary condition, it should also contain a special basin near the walk level for dogs and other small animals.

Likes Our Architecture.

The Golden West must be looking up, somewhat, architecturally. F. R. Benson, an actor and pageant master who returned to London recently from San Francisco, where he has been arranging plans for the Panama Canal pageant, is quoted as saying:

"I come back tremendously enthused with developments in the United States, and especially in California, in the field not only of politics and industry, but also in art. I realize now the extent to which America is creating new traditions, not only for herself, but for the Old World. One of the political phenomena that struck me most is the carrying into operation of the maximum of equal opportunities for all.

"The developments in domestic architecture greatly attracted my attention. Many buildings I saw, especially in the West, presented features of beauty unknown on this side of the Atlantic, and marked a new departure in art.

"In their appreciation of the value of the natural grain and color of wood, marble and stone, in their subservience to some definite purpose in the mind of the architect, they suggest an evolution of house building which does not at present exist in the old country."—Builder's Guide

$1.000 if You Can Burn This Building —Too Bad the McNamaras Are in Jail.

The following from the Southwest Contractor is so out of the ordinary that we reprint it in full, leaving the reader to form his own conclusions:

"San Francisco should awaken to the need of better building. It is not enough to make the entrance imposing and have the interior flimsy. San Francisco should build for permanency. Especially is this true of apartment house construction where, so often, even a year will show great deterioration. It is true that the original owners 'build to sell,' but as is the case of a firm who deal in such apartment houses in a Northwestern city, their name is synonymous with sham and deceit and even to live in one of their houses invites ridicule.

At Long Beach, situated at the corner of First and Locust streets, is a seven-story reinforced concrete building whose owner and builder is so confident that it is fireproof that he has offered all comers $1000 in gold if a fire can be started in it that will communicate beyond the compartment in which it started. The dare was given as a result of the Long Beach city council ordering the building equipped with fire escapes, although this order was rescinded after an investigation by the city fathers.

"To construct a building that is absolutely fireproof is the consuming ambition of the master builder of this day and age," said Mr. Alexander, the owner. "Without any desire to boast, but simply to establish the truth and let it be known for the benefit of all concerned, I will say that I believe I have solved the problem. In the solid concrete building without any wooden material or inflammable stuff about it, I am convinced that we have a structure that is immune from destruction by flames. In fact, I am so positive that it is absolutely fireproof, that I would be willing to risk a little money on an actual test case. I will give any man $1000 in gold coin who can start a fire that will communicate beyond the particular compartment of the building, in which it is started. In the event he fails he will simply pay for the material he uses in his attempted conflagration."

Removal Notice

The well known contracting firm of Williams Bros. & Henderson has removed its offices from the Monadnock Building to the Holbrook Building, Sutter Street, near Sansome, San Francisco.

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Civic Beauty—Effect of Parks and Playgrounds on Real Estate Valuation

THE great movement towards civic betterment which has during the last decade occupied more and more of the attention of municipalities, has in America unquestionably taken as its central idea the acquirement of land and its development for park purposes. Many of the so-called city plans are devoted well-nigh exclusively to the discussion of a park system, while some go further to include only the civic center, overlooking the essential factors of utilitarian nature, which without expense to art should have to do with fostering health, convenience and happiness on the part of the inhabitants, economy, dignity and system on the part of improvements, and conservation in the broadest sense in regard to industries.

Municipalities must face the fact that they have to provide in advance, facilities for well-ordered play and recreation on the part of both old and young, as they would provide for streets and sewers, for police and fire departments. If such provision is made in a comprehensive and systematic manner, it is obvious that great and unnecessary expense will be saved, that parks will be located more correctly as to topography and accessibility, will serve all parts of the city and will aid the city in the broadest and most logical way.

Such provision in advance would at once obviate the danger of criticism in regard to undue interest on the part of real estate owners whenever the time for action for securing park land should arrive.

The enhancement in the value of real estate due to the establishment of parks, parkways or similar improvements made nearby, has many interesting illustrations. Observation will show that the realization of this fact has led numberless real estate owners eagerly to take up land contiguous to or adjacent to proposed improvements of this sort. Many out-of-the-way places previously occupying but an obscure place in the real estate market, have jumped to well nigh fabulous prices at the advent of a park in the neighborhood.

In innumerable instances, it is found that land skillfully treated by landscape architects has been made to sell at prices far beyond that boasting only of the ordinary and stereotyped class of improvements. While it is only natural to look for the finest residences on old established parkways, it is interesting to note the rapidity of high-class development brought about in hitherto cheaper sections of the city by the installation of well-developed landscape improvements.

A case in point in Chicago is especially interesting, says Municipal Engineering. A section of the North Shore, constituting some twenty acres was in 1902 held at $200,000 and was in line for purchase for development as a public park. Later on, however, it was decided to build a park by reclaiming the submerged shallows of the lake along the frontage of the property. In 1906, after these improvements were nearly completed, this same twenty acres was held at a price amounting to $2,000,000, which constituted more than the cost of the improvements.

Shall the United States Build Highways?

It is a question which is slowly but surely forcing itself upon the National Legislature. Many Senators and Representatives now believe that the building of a system of National Highways is of more economic importance than any other public work—more vital than the question of a large navy, more useful than any river and harbor improvement, more necessary than the Panama Canal. For Highways are built and owned by the people and are free to all the people. A few years ago road bills had short shrift in Congress—at present there are nearly a hundred bills before Congress dealing with road building in one form or another.

Although the "good roads" idea has been gathering force and headway for many years, its advocates are still pulling in many directions. Some road associations want State Highways with National Aid. Others want State Highways without National Aid. Still others want good roads paid for by the counties through which they pass, without any

aid. One, at least, believes firmly that the question is not only one for States, Counties, Cities and Towns, but for the Nation.

The National Highways Association believes that the beginning of a comprehensive good road system for the nation must be made by the Federal Government.

It is universal experience that one mile of good road breeds another mile. Put a State-wide, good road down anywhere in this country, and in ten years there will be dozens of good roads reaching it from all parts of the State. Put down a system of National Highways, built and maintained by the National Government, and the various State Legislatures and County officials would soon see the advantages of connecting all parts of the States with those National roads.

There are two million miles of roads in the United States. The fifty thousand miles of highway shown on the map is but a fraction over two per cent of this mileage. But improve these fifty thousand miles into good roads, and keep them good roads by proper maintenance, and fifty thousand miles more would grow almost over night, and then another fifty thousand and another and another, until our great country, with its huge teritory, would be crossed and recrossed with good roads, as France is today.

France has National Highways. These are immense trunk line roads, great arteries of commerce, and from these the smaller roads are built by the provinces of France, just as the States and Counties of our States will build feeders and connections to a National System of Highways.

If France—about the size of Texas—needs National Highways, how much more do we, with our huge territory, require them?

Many idealists and dreamers have proposed National Road Systems for this country. Usually the system has been worked out with a map, a ruler, a pencil, and sublime faith. Mountains, lakes, rivers and forests form no obstacles to such visionary road systems.

To build such a system complete will take a man's lifetime and a huge amount of money. If the wealth of the world were ready to build this system to-morrow, it would still take many years, because there are available neither engineers nor knowledge enough to do it quickly.

When this, or a similar system of National Highways is built—and built it surely will be some day—it will be by a National Highways Commission, which first locates and then builds, one or more roads at a time, learning as it builds. When this huge amount of money is spent—as spent it is bound to be—it will be gradually and through an annual appropriation.

If New York State can afford five millions a year for road building, is it unreasonable to suppose the United States Government can afford ten times as much—or fifty millions a year?

Passing of an Eminent Engineer

Frank Soule, organizer of the College of Civil Engineering at the University of California and Professor Emeritus of Civil Engineering, died February 14 last, of apoplexy. He was 78 years old.

Professor Soule had been with the State University since 1869. He was graduated from West Point in 1866 and served as Second Lieutenant in the Ordnance Corps, U. S. A., until 1869. He was instructor in mathematics at West Point, when he resigned to come to the University of California as Assistant Professor of Mathematics. In 1872 he became Professor of Civil Engineering, serving as Dean of the College until he was emerited five years ago.

He was a native of Mississippi. He was a noted engineering authority and contributed to various scientific journals.

His vast volume of work as a consulting engineer covered exhaustive reports on the San Francisco seawall, the San Francisco Ferry building, construction and design, and irrigation projects from the San Joaquin river.

Want Big Suspension Bridge

Eight counties, including Solano, are to be asked to unite in building a suspension bridge across the Straits of Carquinez from Martinez to Benicia. The matter is to be brought before the California Legislature during the present session, the bill covering it being presented by T. P. Johnson of Contra Costa County. The cost of construction will be somewhere in the neighborhood of $1,750,000, and it is proposed to raise this amount by a bond issue in a specially created district.

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The Late C. F. Weber

Death of C. F. Weber

Mr. C. F. Weber of 2925 Russell street, Berkeley, president and manager of the C. F. Weber Company of San Francisco, and one of the prominent pioneer business men of that city, died suddenly in Berkeley on February 28th of apoplexy.

The following splendid tribute was written for this magazine by Mr. J. H. Fricke, who had been Mr. Weber's business associate for years:

"In the passing of Mr. C. F. Weber, founder of the well known San Francisco firm of school and church furniture dealers, the commercial world, as well as his business associates, lost a valued friend. Of a strong personality his had been the dominating character in his chosen line of business on the Pacific Coast for a quarter of a century. Keen and clear of judgment, clean in his life and habits, fair to all men and of an unusually agreeable personality, he had won and retained to a marked degree the deepest respect and regard of all who came in contact with him. It is said that there was not a man in the United States, engaged in kindred lines of business, but who knew Mr. Weber and loved him, and certainly none ever stood higher in the commercial world or who could command such loyal support."

Mr. Weber was born in Saxony sixty-three years ago, but came to America at a very early age and had been engaged in the manufacture and sale of public seating and of equipment for schools for nearly forty years, twenty-five of which were spent almost wholly on the Pacific Coast, although he also had important manufacturing interests in the East. He founded the firm of C. F. Weber & Co. of San Francisco and Los Angeles, and the manufacturing concern of Weber Costello Co., of Chicago Heights, Illinois, and was President of both companies at the time of his death.

A Superintendent of Waterproofing

The Ceresit Waterproofing Company has added to its staff a superintendence department in charge of Mr. John J. Lyons. It is the aim of this department to superintend any structure where engineers or architects desire to have a check on the contractors doing the waterproofing work. The Ceresit people have been so frequently called upon for this class of service that the management believes this department will be a valuable addition. When superintendents are desired on the job, the company is prepared to give bond of guarantee.

New Construction Company

The Engineering and Contracting Corporation formerly located in the Foxcroft building, San Francisco, has established permanent offices in the Timkin building, San Diego. This firm was recently successful in bidding on some of the new State road work in the southern part of the State. Its personnel is composed of Chicago, Canada and California men of distinction, and includes the Redmond Brothers of British Columbia, who were for twelve consecutive years in Alaska; Peter M. Gopcevic, logical inheritor to the throne of Servia; Capt. Charles Emmett Parnell O'Neill from Missouri and Arizona, a nephew of the famous rough rider, "Buck" O'Neill of Arizona; C. E. Loss, who built the first electric railway in Chicago and the first outer belt line and many large, important works throughout the United States, Canada and Mexico, and Charles E. Fiske, an extensive land owner in the Imperial Valley, a nephew of the famed and philanthropic Jim Fiske of New York, with D. L. Bissell, a well known civil engineer of La Mesa, as chief engineer, and Charles A. Lee, a son of former Supreme Court Justice Lee of Ohio, as secretary.

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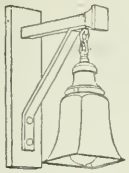

Heating and Lighting

Plumbing and Electrical Work

Indirect Illumination

By FOWLER MALLETT*

MUCH discussion is being given to indirect and quasi-indirect illumination, but there is danger in many of the theories which are being strongly urged in pseudo-scientific terms. It is with the idea of defining the term indirect lighting and classifying some of the modifications of it that this article is written. It has been attempted to avoid all technicalities.

Indirect illumination has for its object two main purposes. The first is to protect the eye from the direct rays of the illuminant, thereby shielding the eye from strain and at the same time increasing its seeing power by doing away with the dazzling, blinding effect of the unshaded incandescent filament. It is obvious that a fixture which increases the seeing power of the eye and reduces the strain is thereby increasing its efficiency as much as if it were making a corresponding increase in the intrinsic brilliancy of the illumination. In fact the term brilliancy may be said to imply a far greater degree of decorative value than of illuminating value in a lighting installation, as all scintillation interferes with the function of seeing. It is for this reason that a room lighted by indirect or quasi-indirect fixtures may appear less brightly lighted and yet be a better room in which to see things than one of similar size with the same amount of electricity applied to direct units. When more than ten to twenty per cent of the strength of the light is permitted to strike the eye direct, a corresponding increase has to be made in the intensity of the light to counteract the blinding effect upon the eye.

The second purpose of indirect illumination is to so distribute the light as to illuminate all portions of the room to as nearly as possible the same intensity. This not only renders a greater area in the room available for use but also increases the seeing power of the eye by making unnecessary those changes of the iris which are required to accommodate the eye to varying intensities of illumination. It is evident that to accomplish this distribution the reflecting surface must involve as large a portion of the ceiling as practicable, and the shape of the reflector within the fixture must be such as to spread the light over this surface with the greatest degree of uniformity. This necessitates hanging the fixture a definite distance from the ceiling, proportionate to the size of the area to be lighted and the angle of the reflector.

*Member of Adams, Hollopeter & Mallett, Lighting Fixtures, San Francisco.

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It is obvious that a fixture too close to the ceiling will not spread the light over a suitable area.

To sum up, then, the two-fold purpose of indirect lighting is—

1. To soften the light to the eyes thereby overcoming the liklihood to strain and increasing the ability to see; and

2. To distribute the light uniformly over a given area instead of illuminating in spots as is done by direct units. It is obvious that the fixture which accomplishes this with the smallest current consumption is the most efficient.

There are two general types of fixtures designed for this purpose. These are popularly known as "total-indirect" and "semi-indirect." The coined word "indirectdirect" better describes this second form of fixture, but will be avoided on account of a trade name which has been adopted, similar to this.

The total-indirect method of lighting is not new. Its application in the form of cove lighting was the first to gain prominence, and in certain classes of work this is an effective method of illumination. But the great amount of current consumed and the expense of a suitable installation have militated against any general application of the principle. Then, upon the production of a highly developed silvered glass reflector this idea of the cove with its trough of lights was reduced to a basin of metal or composition suspended from the center of the ceiling and containing the source or sources of light set in suitable reflectors. This reduced the cost of the installation and furnished a decorative fixture which was missing in the cove method.

By regulating the distance from the ceiling and the angle of the reflector to the size of the area to be illuminated this type of fixture has been adapted to use in many types of interiors. But with all concealed lighting the eye seems to feel the need of an "apparent source of light." This manifests itself in the feeling that a shadow exists immediately beneath the fixture—a feeling produced by the contrast between the brightly lighted ceiling and the black underside of the fixture bowl. No matter how beautiful the fixture may be in the daylight, its detail and color are lost when lighted, for although the light may fall on all other objects in the room, the body of the fixture itself remains a dull black mass.

Different methods have been adopted to overcome this. Direct lights have been applied to indirect fixtures increasing the intensity of light beneath the fixture and throwing more or less light onto the bowl of the fixture itself. This has been erroneously called semi-indirect lighting. It should be designated parti-indirect, and is a compromise between direct and indirect lighting—the indirect portion giving diffused illumination and direct giving brilliancy and concentrated light.

Another method of counteracting this ocular impression is to make the fixture body partly of art glass or other translucent material and to provide auxiliary lamps in the fixture for illuminating this bowl independent of the indirect reflector units.

Then, too, with any form of indirect fixture wall brackets are often used to give the brilliant, scintillant spots of light to which we have grown accustomed. They may add to the decorative value of an installation and may furnish concentrated illumination at points where it is desired, but in any of these schemes it should be remembered that not over ten to twenty per cent of the strength of the light can be permitted to fall directly upon the eye without appreciably reducing the seeing power.

On the other hand, a fixture designed to reflect all the light upward is likely to produce an unsatisfactory effect due to the lack of shadow and the consequent loss of perspective. The eye is satisfied, however, with a translucent fixture body transmitting ten to fifteen per cent of the light and reflecting the balance. The direct light thus transmitted is about equal in intensity to that reflected from the ceiling. Under average conditions the brilliancy of the ceiling is about 12 per cent. A direct light of 15 per cent, therefore, produces gentle shadows and creates perspective. Under this condition there is an improvement in the ability to see, and as a result no more power is required than for a corresponding direct illumination where the room is lighted only in spots. When an opaque fixture is used a greater power consumption is requisite in order to satisfy the eye for the lack of the perspective.

The semi-indirect, or indirectdirect, method overcomes this: In this case, instead of an opaque silver-backed reflector, a translucent reflector is employed, which may either be encased in some sort of decorative glass bowl, or may be sufficiently decorative in itself to form the body of the fixture. The carved alabaster bowl is of this type, as this material combines the reflecting and diffusing qualities in a marked degree and is wonderfully decorative.

Still better results can be obtained from some of the fine "alabaster type" glass bowls manufactured for this purpose, but it must be remembered that along with high reflective power the bowl must be of sufficient opacity to prevent the direct transmission of more than ten to twenty per cent of the light, or you have not an indirect but a modified direct fixture. A lack of reflecting power and too great direct transmission is the fault of most bowls shown for this purpose.

This gives a general notion of the two

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main forms of fixtures in which the indirect principle is employed. Some of the fixtures involving the principles of indirect lighting in a greater or less degree will be taken up in an early issue.

Architecture and "Illuminating Engineering"

Some views expressed by Mr. Frank E. Wallis, Architect, New York, for publication in The Illuminating Engineer, London, during his visit to that city.

THE profession of the architect is a very old one. Illuminating engineering, on the other hand, is amongst the youngest of professions. A few suggestions from one who, while connected primarily with architecture, has also had opportunities of appreciating the value and scope of illuminating engineering may therefore be of interest.

There are certain problems, such as the lighting of offices and factories, in which the object of the light provided is purely utilitarian, and where the illuminating engineer has much good work to do in providing efficient and serviceable conditions of illumination.

But there are higher fields for his activity in connection with the lighting of buildings of distinction where aesthetic and architectural considerations must prevail. At the present moment it may be said quite frankly that in such work the architectural profession has little use for the illuminating engineer. But this should not be so. The illuminating engineer might be of real service if he understood something of the architect's work and the conditions with which he has to deal. There are many instances in which the illuminating engineer will never carry his point so long as he thinks only of efficiency. He should know something of the history of architecture, and the meaning of the traditions by which the architect is guided. He should understand how to adapt a method of lighting so as to be in harmony with the style of a room, its furniture, and the general scheme of decoration. He should appreciate the fact that the light provided must not only serve to illuminate the table, but to reveal panels, moulding, ornament, and color. If the illuminating engineer will study these things, his knowledge of the technical possibilities of the various illuminants, of shades and reflectors, etc., should be of great value. I venture to suggest, therefore, that, in the courses of instruction devised for lighting engineers in the near future the study of architecture should play a not inconsiderable part.

In the same way it may be conceded that some architects do not appreciate sufficiently the aims of illuminating engineering, and it would be well for them, too, to receive more information about illumination, provided this information is presented in a suitable form. There are many instances in which the combined efforts of the architect and the lighting engineer would lead to great results, and for the higher branches of lighting work some form of fusion between the professions seems to be necessary.

I wish your Society the success it deserves in its noble and elevating aims, and I hope that it will be instrumental in bringing about closer co-operation.

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Over-Illumination.

Over-illumination at night is a common offense both in public places and in the home. The former defend it usually on the ground of its advertising value—that patrons would not enter a restaurant, lecture hall, etc., unless it was "brilliantly illuminated." But the latter would seem to use this same method for keeping people out; for surely we all know of houses that we have left with the irritated threat never to go there again, and all because our poor eyes ached from the tax of trying to shut out the excess of gas or electric light. It is part of our American prodigality to turn on every possible light, and part of our American neglect of the aesthetic niceties to leave these lights naked and glaring where the matter has not been seen to in the original design of the house. The hygienic importance of illumination neither inadequate nor excessive deserves more attention than it has yet received, and for the purpose of stimulating interest in the subject the Illuminating Engineering Society of New York has prepared a pamphlet on the subject for free distribution. Care has been taken to keep it within the scope of the non-technical reader. Its careful perusal might save many a family in the land from going to bed with aching eyes.—Exchange

No Heat, No Rent.

Failure to heat an apartment properly has resulted in a tenant being relieved by the court of financial obligation for rent accrued while the apartment was unsatisfactorily heated even though he occupied it. By a decision of the Supreme Court he was also relieved of any responsibility for the unexpired lease at the time he vacated the apartment because sufficient heat was not being supplied to make the apartment comfortable. The decision might with profit be brought to the attention of landlords in a diplomatic way by heating contractors generally. If a landlord knows that his right to collect rent is being endangered by lack of proper heating facilities he is likely to require the services of a heating expert. Like the early bird, the man who is awake early is more than likely to profit by the landlord's needs.

Cost of a Municipal Lighting Plant.

East Liverpool, Ohio, a city of 21,000, is contemplating the construction of a municipal lighting plant, and has received a report from S. B. Martin, Pittsburgh, on the cost. The following estimate is furnished from figures submitted by manufacturers and contractors:

Two 625-k. v. a. steam turbines complete with 2,300 volts, 3-phase turbo alternaters, exciters, condensers and pumps	$25,000.00
Two 300-horse power water tube boilers, erected complete with stacks, stokers and brickwork	8,500.00
Four 50-light magnetite arc lamp equipments, complete with transformers, lamps and all accessories	10,000.00
Pole line complete with arc and commercial circuits	20,000.00
One 4-panel switchboard complete	1,300.00
Two boiler feed pumps	400.00
One feed water heater	300.00
Cold water supply pumps	600.00
Transformers for consumers	4,000.00

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400-lamp street tungsten equipment	2,500.00
Power house building.....	8,000.00
Total.....	$88,000.00

The arc-lighting system is contemplated to consist of 200 metallic frame, 4-ampere arc and 400 100-watt tungsten street lamps. The commercial lighting service is designed to serve 10,000 40-watt lights.

Annual Meeting of Pacific Hardware & Steel Company

The annual meeting of the stockholders of the Pacific Hardware and Steel Company was held March 11th at the company's office in San Francisco, and the following directors were elected for the ensuing year:

A. L. Scott, Milton Pray, H. J. Morton, A. W. Dow, W. H. Scott, John McDonald, L. K. Walsh, A. E. Sugden and G. W. Geauque.

The officers of the company for 1913 are as follows:

A. L. Scott, President; H. J. Morton, first vice-president; W. H. Scott, second vice-president; L. K. Walsh, third vice-president; H. J. Morton, treasurer; L. K. Walsh, assistant treasurer; A. W. Dow, secretary

This company declared recently a dividend of 5 per cent, or $2.50 per share, on its stock, the par of which is $50. No financial statement of the year was issued to the public yesterday, but the vice-president admitted that business had been better and profits larger than in 1911, which was by no means a bad year.

Few San Franciscans have any adequate conception of the immensity of this company's local plant, which comprises 336,600 square feet of flooring. Literally, there are acres of it, jammed to overflowing with every variety of manufactured steel products and general hardware.

San Francisco Architects Move

Architects A. F. and O. A. Rousseau have moved to splendid new offices on the fourth floor of the Monadnock Building, San Francisco. The offices are as large and tasty as any architectural suite in the city.

Architects Hladik & Thayer have dissolved partnership. Mr. Hladik will retain offices in the Monadnock Building while Mr. Thayer is now located in the Merchants National Bank Building.

Architect A. D. Nicholson has moved from 20 Montgomery street to the Whittell Building, 166 Geary street, San Francisco.

State Architectural Commission

A bill has been prepared for presentation to the Legislature of the State of California, looking to the establishing of a State Architectural Commission, consisting of qualified architects and engineers, and providing for the employment of a Supervising Architect under the control of the Commission. It is intended that the Commission shall be a substitute for the present office of State Architect, and it has been recommended by the Southern California Chapter of the American Institute of Architects, which is urging this legislation, that the members of the Commission shall serve without compensation

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By the Way

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Roebling Takes Over Collins' Metal Stud.

The Roebling Construction Company has recently placed upon the market the "Roebling Fabric" for concrete reinforcement. "Roebling Fabric" consists of a system of wire mesh of rectangular pattern in desired combinations of the various sizes of wire woven at any desired intervals. It is adaptable for use in floor systems, wall reinforcements and steel wrapping. The reputation of the Roebling people vouchsafe the success of the material for the purposes intended.

The firm has also taken over the "Collins Metal Studding," which has been on the market for some time. For a light steel partition in fireproof buildings this studding is accepted by engineers and architects as a standard.

Still another new line for which this company has secured the patent is a self-sheathing metal lath and comprises a sheet of expanded metal, backed up in such a manner as to enable the plastered surface to be accomplished with a very considerable saving in material.

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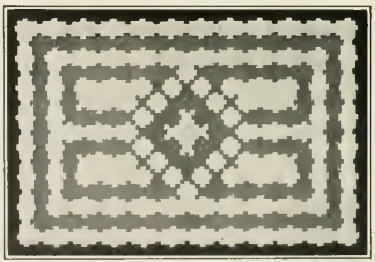

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Near turpentine, Felix Gross Co., 440 Ninth street, sole distributors, is a perfect solvent for paint, taking the place of gum turpentine. It has established itself in the commercial world on its merits, and by endorsement from the largest consumers. It is a mineral spirits, having a natural affinity for lead and oil; containing no acids, alkali or petroleum greases, being a perfect distillation and not a mixture.

It is used by the leading railway companies, steamship companies, ship chandlers, painters, furniture polishers, soap manufacturers, stone and metal polishers and printers, in fact in all the crafts where gum turpentine has previously been used. It is ideal in its wearing qualities on outside work (particularly on ships) where wear is required. Its price (about half the price of gum turpentine) recommends it to the trade, not only on the basis of economy, but by reason of its general usefulness in all of the trades above mentioned.

Owing to the process of distillation to which our product is subjected, all Hydro-Carbon odors are largely removed leaving it with an odor of its own, which when mixed with paint rapidly disappears, leaving no disagreeable effects like turpentine and mixed paints. It recommends itself for all purposes where turpentine has previously been used. It is sold under a strict guarantee to do the work of turpentine absolutely. Write to Mr. Gross for more particulars and price list.

Hawaiian Koa Lumber

Most people think that the only articles we import from the Hawaiian Islands are sugar and canned pineapples, and a little coffee. In addition to this there is a considerable quantity of very beautiful wood, called Koa, imported into San Francisco and New York.

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NEW YORK CHICAGO PHILADELPHIA MONTREAL GLASGOW

This handsome wood is light brown in color and takes a most silklike finish on account of its close texture and grain. Moreover, it is, as a rule, full of figure. In the Hawaiian Islands Koa is almost a national fetish. Everything that is possible to be made out of a cabinet wood is made of Koa and it is a peculiar fact that this lumber brings a higher price in Honolulu than it does in San Francisco. The market there, however, is rather limited so that the over-production is shipped to the United States and, coming into competition with other woods, it must compete with them in price and, as a matter of fact, costs here less than mahogany. Although Koa is sometimes called Hawaiian mahogany, it stands in a class by itself. Like mahogany, however, it grows richer with age.

Several years ago Koa was used to quite an extent in San Francisco for interior trim, store fixtures and furniture, but through several untoward circumstances the supply was cut off and this beautiful Hawaiian wood was apparently forgotten except that the three hat stores on Market Street and the restaurant on Powell Street always attracted attention on account of their beautiful Koa fixtures.

National Tube Company's 1913 Edition Book of Standards

The 1913 edition of the Book of Standards has just been received from the press. The present edition which is the first since the 1902 edition is much larger and more complete than the older one. It contains 559 pages 4 in by 6½ in and is printed on Canterbury Bible paper, the book including the binding being not quite five eighths of an inch thick and will fit the pocket readily.

The information incorporated has made it strictly a pipe handbook and as such it is believed will find an immense use with the trade.

The index of the book will be found to be very complete all headings being thoroughly cross indexed. There are approximately 4,000 references found in the index.

Several pages are devoted to a descriptive article covering the main process of manufacturing both welded and seamless tubes, also giving information in regard to the threading durability and physical properties, etc., of both "National" Pipe and Shelby Seamless Steel Tubes.

There are a number of pages which give weights, dimensions, threads per inch, test pressures sections of joints, specifications, etc., of the various kinds of pipes and tubings made. Price of both, $2.00. Published by the National Tube Company, Pittsburgh, Pa.

The manufacture of Koa lumber has again been taken up in the Hawaiian Islands with renewed energy and, as there is plenty of this wood on the market, both here and in New York, we may expect to soon see Koa again via with mahogany as a favorite cabinet wood.

A Meritable Dustless Ventilator

The Austin Dustless Ventilator is offered for sale by the New Era Manufacturing Company of Chicago and architects and builders interested should write the manufacturers for full details and price list as this is one of the most practical and economical ventilators in the market. Unlike many ventilators it is not complicated. It is as easily adjusted as raising or lowering a window. There are no screws or nails to mar the woodwork. All inside parts can be taken out and cleaned and replaced without raising the window or removing the ventilator. It can be fitted in any window beneath the lower sash, but in the construction of new buildings it is preferable to place them either in the wall under the window or in the rail of the lower window sash.

The ventilator is made of copper, oxidized, set in a wood frame to harmonize with the interior woodwork of a room, with plain or frosted glass on each side of the ventilator, presenting an artistic appearance. Experts on ventilation endorse the mechanical principle of this ventilator, and say it is the most practical, economical and sanitary ventilator on the market today.

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REPORTS AND ESTIMATES ON PROPERTIES AND PROCESSES

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A Business Getter

As a rule we don't take a great deal of stock in circular letter writing to architects. Unfortunately, most of these letters are written in a stereotyped style and they find a permanent resting place in the waste basket or fireplace. However, there are always exceptions to the rule; here is one, being a letter recently sent out by Manager McCroskey of the Western Builders' Supply Company of San Francisco:

Results count! The class of work furnished, and the standing of architects specifying, prove beyond any doubt that our "COMPO" is different. *See enclosed sheets.*

Decorators Supply Company's Compo does not crack, shrink or check. Contains no plaster; is far superior to putty, wood pulp, sawdust compo, etc., all of which are deficient.

Fifteen years in use for natural, stained and painted woodwork.

Let us tell you more about it, particularly mouldings. Our samples convince, no matter what bad experiences you have had.

Catalogue contains 5,000 cuts; also modeled to detail. There are many imitations, but why spoil a good job with experiments? Use the best; not expensive.

Write or phone today.

Respectfully,

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List of a few jobs of COMPO MOULDINGS, Canitals, and brackets on WOOD, either of natural, stained, or painted finish. (This list contains no plaster or exterior work.)

EXPLANATION Compo MOULDINGS are even more practical than capitals and brackets, but it is only recently that we have solicited their use—this accounts for the larger part being caps and brackets.

LOCAL JOBS San Francisco: Elks' Hall, Caps, Oregon Pine, A. A. Cantin, Architect; Mary's Help Hospital, Reception Room, W. Cedar Caps and Brackets, C. J. L. Devlin, Architect; Hale's Show Windows, Fifth and Market Streets, Caps and Compo Mouldings (Gilded) on Circassian Walnut, Reid Bros., Architects; Apartment House, Post and Agate, near Taylor Street, Mahogany Compo Moulding, E. T. Foulkes, Architect.

Oakland, Alameda: Elks' Hall, Alameda, Mahogany Caps, J. Eugene Freeman, Architect; Woman's Club, Oakland, Large Oak Caps, Walter J. Mathews, Architect; Kunhall Residence, Oakland, Red Gum Compo Moulding, Albert Farr, Architect.

Other Towns San Leandro Library, Oak Caps, W. H. Weeks, Architect; Modesto Library, Oak Compo Moulding ONLY, W. H. Weeks, Architect; Carnegie Library, Eureka, Classical Redwood Capitals, K. Evans, Architect.

Hon. F. H. Short Residence, Fresno, Natural Finish Caps, E. Matthewson, Architect.

EASTERN JOBS Marshall Field & Co., Chicago, Show Windows, Mr. Fraser, Architect; Congress Hotel, Chicago, Ladies' Restaurant and Cafe, Marshall & Fox, Architects, Adolphus Hotel, Dallas, Tex., Barnett, Haynes & Barnett, Architects; Monteleone Hotel, New Orleans, Toledano & Wogan, Architects; Blackstone Hotel, Chicago (Building cost $3,500,000.00) Lobby Walls Compo Walnut Mouldings, Ornaments, etc., Louis XVI, Marshall & Fox, Architects; Minneapolis State Capital, St. Paul, Cass & Gilbert, Architects.

Open Los Angeles Office

The Steiger Terra Cotta & Pottery Works, pioneers in the line of fireproof material in San Francisco, have opened permanent branch office and yard in Los Angeles. Charles W. Corbaley is in charge with headquarters in the H. W. Hellman Building.

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Special Prices to Contractors and Builders. INVESTIGATE THIS!

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Five to six pounds of the powder properly mixed with water makes a gallon of good paint and covers from 100 to 400 square feet to the gallon according to the surface. Hence, its cost is less than one-third that of oil paint and for many purposes it is better as it is a fire retardent. *Distributors*
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The Tuec Air Cleaning System

AFTER careful investigation Engineers and architects who have made a thoroughly investigation now realize that it is air that does cleaning and not vacuum, and that consequently the machine or system that moves the greatest number of cubic feet of air per minute for the horse power expended is the most efficient.

Free air has a dirt carrying capacity infinitely superior to that of the rarified air produced at the cleaning tool under the high vacuum systems.

The Tuec Air Cleaners are designed to displace an enormous amount of air per energy consumed, whether the cleaner is to be used for household, apartment or office building cleaning, and the system is so simple in all particulars that it appeals to anyone interested in vacuum cleaning The demand for the Tuec machine is very extensive and the United Electric Company, of Canton, Ohio, manufacturers of this cleaner, now have the largest factory in the world devoted exclusively to the manufacture of stationary air cleaning systems.

The air displacer, a powerful centrifugal fan, is attached to the rotor shaft of the motor (this shaft being vertical) and revolves in a horizontal plane. The only bearing surfaces in the whole machine are Ball ("Skefko") bearings and accordingly the friction loss is particularly low. One of the smaller units was run for one hundred days continuously, under seal, thus preventing inspection and oiling. At the end of this period the ball bearings (the only wearing surfaces) were carefully calipered and found to have sustained no measurable wear whatever. This period of operation equals 23 years' service at two hours per week, the time necessary to keep an ordinary home perfectly clean with the Tuec.

The dirt is separated from the air that carries it by the action of gravity, thus eliminating the unsanitary and troublesome cloth sack which, of course decreases the air supply in a continuously increasing degree as it becomes clogged with dust particles. The pipe specified with the system, is in no case smaller than two and one-half inches in diameter.

This large pipe prevents clogging troubles with matches (the common parlor match being 2¼ inches in length) and permits a big volume of air being displaced at the tool with very little loss.

In addition to the prevention of clogging troubles, the advantage of the large pipe can readily be realized when one considers that one 2½-inch pipe has a carrying capacity of 1.7, 2-inch pipes; 3.3, 1½-inch pipes; and 11.4, one-inch pipes.

The Tuec System is designed to give seventy to ninety cubic feet (120,960 to 155,520 cubic inches) of air per minute at the cleaning tool. This volume is so great that it lifts and takes into the big tools, pieces of wood, cigar stubs, matches, lint, pins, dust, etc., while the vacuum is so low that it cannot hurt the finest fabric or carpet.

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CONTRACTORS FOR STRUCTURAL STEEL AND IRON
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In the largest vacuum cleaning test ever held, the Tuec scored 97.6 efficiency out of a possible 100 per cent, and the nearest competitor scored 85.5 per cent. This 97.6 per cent efficiency was scored on the following requirements of the engineers who conducted the test:

80 cubic feet of air capacity per minute orifice.
1 inch of vacuum just inside each orifice.
Power consumed.
Simplicity of design and construction.
Cost of maintenance and repair.
Efficiency and lubrication.
Noise.
Tools.
Hose.
Floor Space occupied.

The Engineers who conducted this test were: Dean John R. Allen, of the University of Michigan; Mr. Charles H. Treat, Chief Designer of the American Blower Company; and Mr. Howard E. Coffin, Vice-President and Chief Designer of the Hudson Motor Car Company. All members of the American Society of Mechanical Engineers.

Up to January 1, 1913, 4600 Tuec machines were installed and in operation and on March 1, 1913, contracts had been entered into for the erection of an addition to the present factory which will increase the size about 154 per cent. This is a remarkable record as the Company has been in the field not quite three years and in that period it has been stated that sales have increased to such an extent that two Tuecs are sold to one of all competing machines combined.

The system has been installed locally in the Bacon Building, at Oakland, University of California, Berkeley, Hale Bros. Dept Store, San Francisco, The United Railroads, Geneva Street Carbarn and is being installed in the new Standard Oil Building. The local representatives of the United Electric Co., Canton, Ohio, the manufacturers, are the Tuec Co., of San Francisco, 523 Mission street

Portland's Splendid Telephone Building

The foundation work is completed for the Pacific Telephone & Telegraph Company's $900,000 central office building in Portland and the steel frame is under construction.

The site for the building is at the southeast corner of Park and Oak streets, having a frontage of 100 feet on Oak street and 100 feet on Park street. The ultimate height of this building will be 14 stories, 11 of which will be erected at present, with the intention of adding the additional stories as the growth of the business demands.

The building will be of strictly class "A" construction, with steel frame, reinforced concrete floor and exterior brick walls. The treatment of the facades, executed in mission brick, laid up in English bond with stone and terra cotta trimmings, which will harmonize with the adjacent new Oregon Hotel, will present a building of simple and dignified appearance and when completed will be one of the handsomest and largest buildings in Portland and probably the largest telephone building west of Chicago. The building will be completed in July, 1913.

The building is to be equipped with the latest type of electric elevators and will also have a complete heating and ventilating system, pumping, vacuum cleaning and pneumatic tube system.

The cost of erecting the 11 stories of this building will be approximately $400,000 and by the time the additional stories are added the building will have cost at least $750,000. The telephone equipment to be placed in the building at this time will cost approximately $300,000, with an additional cost of $20,000 for bringing the underground conduit and cable to the new building. This will make a total of about $900,000 that the company will expend in Portland for its new main central office station.

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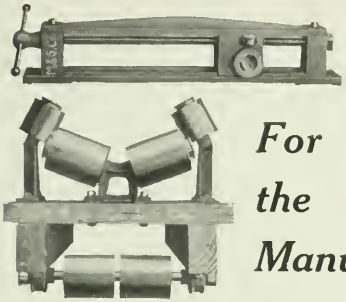

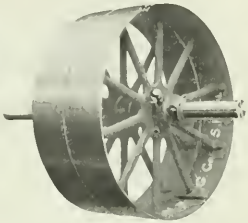

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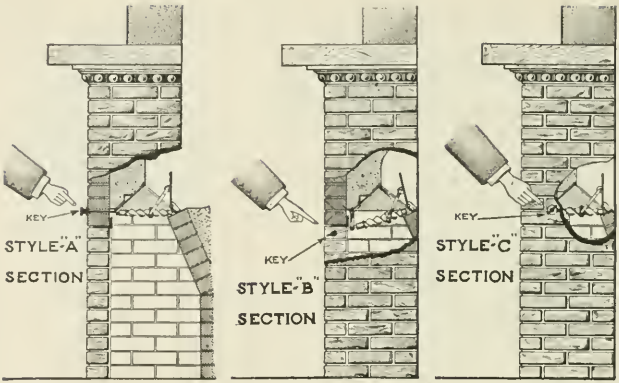


Fig. 1. Fig. 2 Fig 3

A Fool-Proof Device for the Open Fire Place

THE Colonial Fireplace Company of Chicago has recently put upon the market a damper for open fireplaces which combines so many good and new features with such simplicity, that it seems remarkable the ideas embodied in it have not been brought out before.

The Improved Colonial Head Throat and Damper, as it is called, is in itself, a product of the experiences of more than 20 years of practical and scientific fireplace construction.

It is now beyond the experimental stage, having proved itself the most effectual as well as simple, (termed by some architects "Fool-Proof") damper yet manufactured.

It is so easily operated that any child can perfectly adjust the draft and escapement.

The Colonial Head is made in sections of gray iron casting reinforced with a steel angle and so arranged for expansion and contraction that it will not, when heated, affect the brick work. Thus the possibility of cracking brick or tile facings is avoided. Protection is also afforded against the danger of fire where the fireplace facing joins the rough chimney breast.

The damper is located at the most vital point of the fireplace, and in wrong construction of this part lies the cause of failure with many an otherwise good fireplace. Here also will be found the greatest saving in the cost of constructing the fireplace, as even the most experienced mason will spend more time forming this part than would pay for the entire cost of the new Improved Damper, and then, the durability and efficiency of his work will not compare with results obtained by using a Colonial Head.

The smooth iron surface of this device offers least resistance to the smoke while its singular form insures the greatest amount of heat radiation with a perfect smoke escapement.

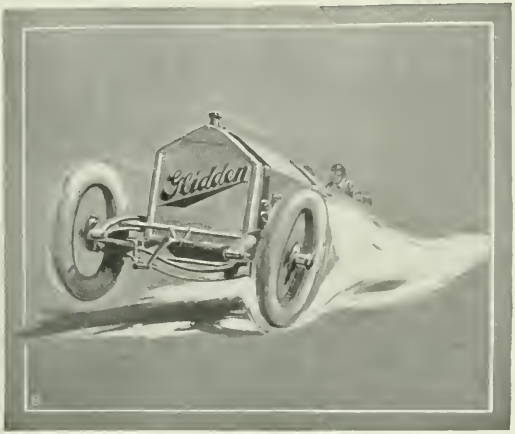
The Improved Colonial Head is made for fireplace openings from 20 inches to 64 inches in width and may be operated in several ways as illustrated.

In Figure No. 1 is shown the regular or "Style A" of operation that is with the key coming through the facing at the front of the fireplace.

Figure No. 2 shows "Style B," in which the key comes out just beneath the angle that supports the face brick across the opening. With this style of operation, an extra key or wrench is sent loose for convenience in taking hold of regular key which may become hot from exposure to fire.

The third figure (Figure No. 3) shows "Style C" operating, in which the key comes through the brick or tile at the end of the fireplace. An iron sleeve is provided to protect the rod and insure the easy working of the damper in this style.

The convenience of this device, the economy of time and labor, in its installation, the protection against fire as well as the unusual demand in the East, have caused the manufacturers to arrange with the following well known firms along the Pacific Coast to carry the Colonial Head Throat and Damper in stock:



TO WIN!

In every race, in every game, in every trade, in every profession, in every calling—no matter how exalted—the object is to WIN.

Every effort has been made, and no precaution has been spared, to make Glidden Green Label Varnishes, White Enamels, Endurance (Mission) Wood Stains, Waterproof Flat Wall Finishes and Cement Coatings, the highest grade possible to produce; and they have WON their reputation ABSOLUTELY ON THEIR MERITS.

When you write your specifications, you write to WIN.

Let us send you samples of our products. For full information regarding specifications of our products, see Sweets' Index

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FACTORIES
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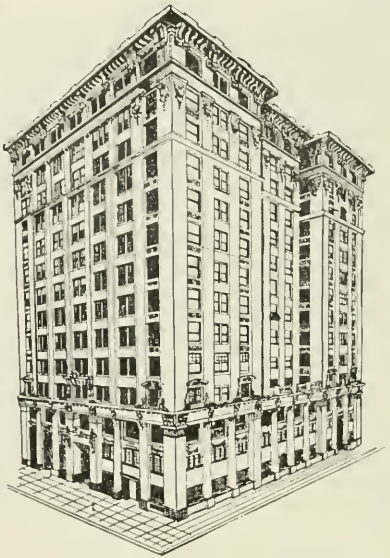
TUEC AIR-CLEANING SYSTEM



Los Angeles Investment Company Building
Ernest McConnell Architect

Mr. J. A. McKelvey, superintendent and engineer of the above building, writes as follows:

"Have been using your sweeper machines for six months in the Los Angeles Investment Company's new building, corner 8th and Broadway.

"I have used several different makes of high vacuum sweepers in the past, but would not give the **TUEC** for any other machine I ever used. Its quiet and perfect operation enables me to forget it is in the building. We have not spent one cent in repairs nor has it given one moment's trouble."

One man with the **TUEC** does a floor in one-half the time it used to require with the old method high vacuum machine with its small tool. The work done by the TUEC is most satisfactory."

TUEC COMPANY OF LOS ANGELES	742 So. Hill Street
TUEC COMPANY OF SAN FRANCISCO	523 Mission Street
TUEC COMPANY OF PORTLAND	408 Lumberman's Building
TUEC COMPANY OF SEATTLE	401 Mutual Life Building
TUEC COMPANY OF SPOKANE	301 Peyton Building
TUEC COMPANY OF VICTORIA, B. C.	1106 Douglass Street

OR

THE UNITED ELECTRIC CO., Canton, Ohio.

L. C. SMITH BUILDING
SEATTLE, WASH.

GAGGIN & GAGGIN, Architects — The Whitney Company, General Contractors

The highest building in the world, outside of New York City. Now being erected. Equipped throughout with The Dahlstrom Products.

PYRAMIDS

Ancient and Modern

REALLY fireproof buildings are as indestructible—by fire—as the pyramids. The modern type of building can be readily likened unto an Egyptian pyramid. Their stability is fact. Their endurance is not a matter of chance.

When a building is structurally fireproof and the possibility of a fire traveling from room to room or floor to floor completely obviated, it is an impossibility for the incipient fire to generate sufficient heat to cause a greater damage than consume the inflammable contents of the room, compartment or unit in which the fire originates.

The installation of the Dahlstrom Products totally eliminates the possibility of a fire from spreading by the simple method of starvation. A fire, will not, cannot travel, from its point of origin for the Dahlstrom Products offer no additional fuel for it to feed upon. To accomplish this final, necessary and absolute degree of fireproofing nothing of an artistic nature is sacrificed.

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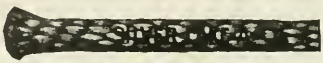

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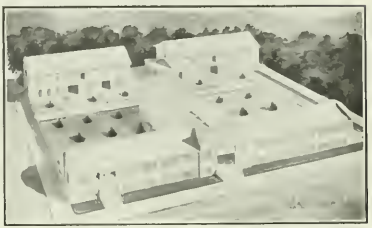

Moving Picture Plant at Niles, California
Geo. W. Page, San Jose, Architect

Signs of Awakening

(From the Builder's Guide, Philadelphia)

San Francisco at last shows signs of at least awakening to the fact that good building is of more vital importance than a big volume of building and that to be truly great a city must be able to show not buildings of a ginger-bread order of showiness, but structures in which the graces of architecture blend with honest material and enduring workmanship. Witness, by way of attesting this awakening, the appended observations from the pages of our esteemed exchange, the "San Francisco Architect and Engineer":

"The architect is not so much to blame—for he is urged to 'save,' 'trim,' 'cut-down,' and 'cut out,' until the architect's original plans would not be recognized. Inferior trim, poor fittings, the cheapest fixtures, unreliable materials, etc., together with single floors, absence of sound deadening materials, with the upper floors often as flimsy as a tenement while the lower floors and the entrance may have all the strength and beauty of a palace. Such methods have prevailed here for so long that it is hard to change them, but it is time now to break away from wrong precedents and build for a future San Francisco which will not be a reproach on the honesty of the present generation."

Recent Terra Cotta Contracts

Gladding-McBean & Company, of San Francisco, have been awarded a contract at $22,000 for furnishing the terra cotta for the twelve-story Class A hotel building to be erected at the northwest corner of Fifth and Main Streets, Los Angeles, for Hart Bros., proprietors of the Rosslyn. Parkinson & Bergstrom are the architects.

Gladding-McBean & Company have also been awarded a contract at $35,000 for furnishing the glazed terra cotta facing for the fourteen-story Class A steel frame store and office building to be erected at Eighth and Spring streets, Los Angeles, for the Home Builders Company. J. Martyn Haenke is the architect.

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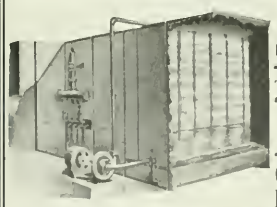

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To Revise Portland Building Code

Mayor Rushing of Portland, Ore., has named a committee to revise the building code. There are eleven members, five of whom are to constitute a working sub committee and the other six an advisory committee. The membership was made up with the idea of having it represent all who are interested in the revision of the code. The following make up the committee, together with the organization or interest they represent: Ion Lewis, board of appeal; H. V. Whitney, American Institute of Architects; F. V. Naramore, Oregon Society of Engineers; V. I. Bingham, builders' exchange; H. E. Plummer, City Building Department; I. Fred Larson, Realty Board; James McCune, Board of Underwriters; B. W. Sleeman, Building Trades Council; Rev. E. V. O'Hara, Consumers' League; H. D. Boardman, Fire Marshal; George Dowell, Fire Department.

Opposes Class B for Hotels.

Councilman V. E. Dodson, Superintendent of Buildings, San Diego, went on record recently as opposing hotels of great height of flimsy construction. He recommended to the City Council that requests of George Holmes for a special permit to erect a five-story hotel of Class B construction at Ninth and C Streets be denied. His recommendation reads:

"The reason why hotels are restricted in height by the city building ordinance is undoubtedly caused by a desire to safeguard the occupants. A building over four stories occupied as a hotel is always suggestive of human safety on one side and the almighty dollar on the other. I cannot recommend high buildings for hotel occupancy unless strictly Class A buildings."

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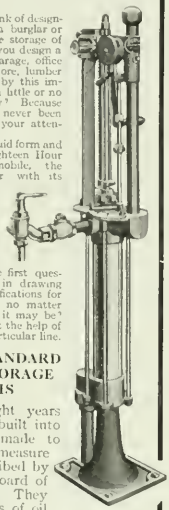

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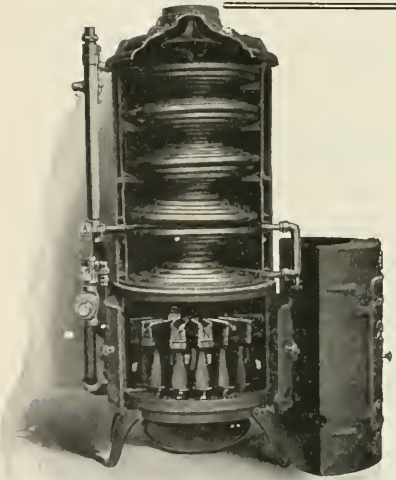

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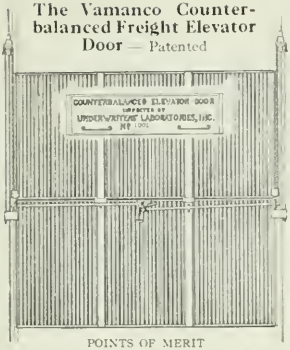

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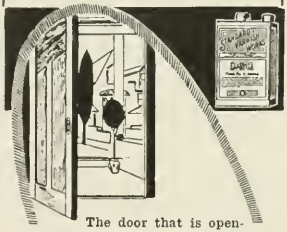

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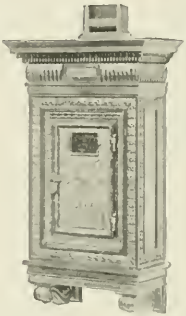

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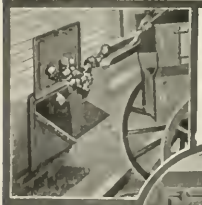

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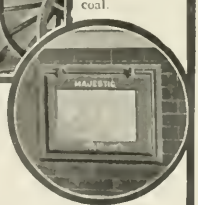

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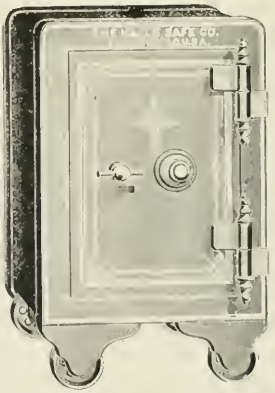

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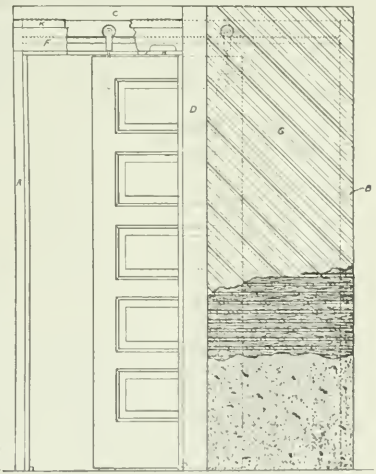
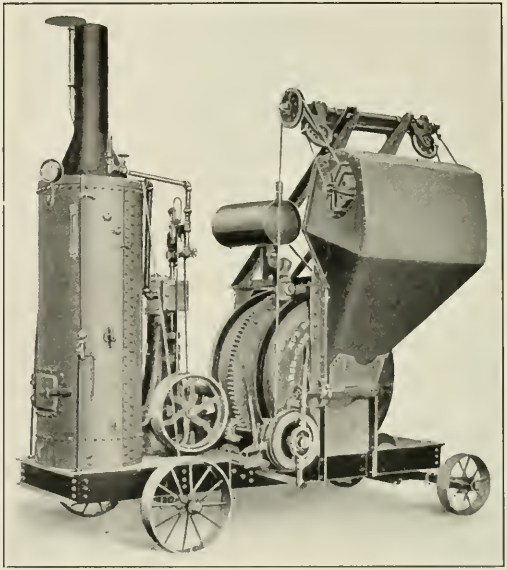


Fig 4



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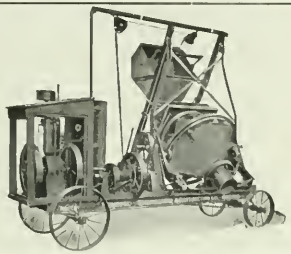

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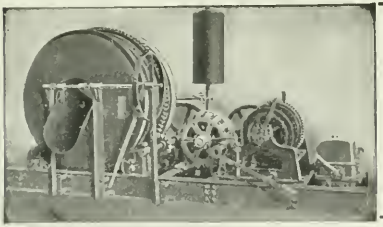

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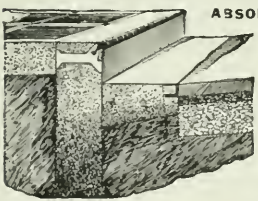

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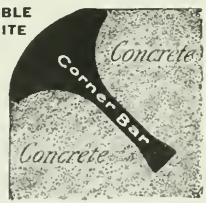

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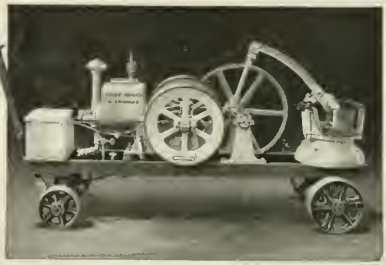

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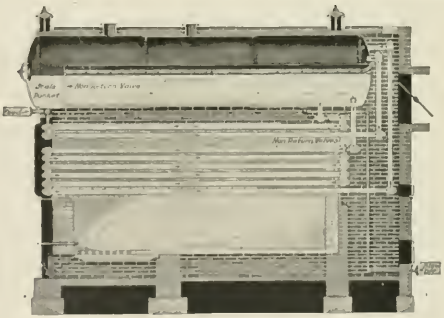

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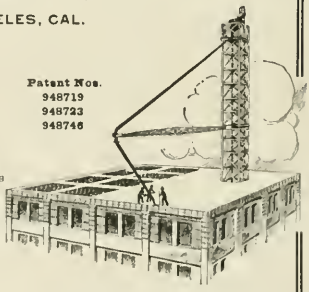

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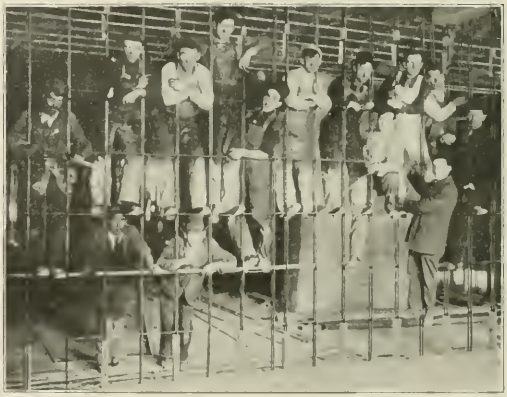

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BUSWELL'S Steel and Concrete Paints

A CALIFORNIA PRODUCT HAS MET ALL TESTS ASK US

Works and General Offices - - OAKLAND, CAL.

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CEMENT—Continued
The Building Material Co., "Medusa White Portland" ....583 Monadnock Bldg., S. F.

CEMENT EXTERIOR WATERPROOF COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See distributing Agents on page 153.] Boyd & More.....356 Market St., S. F.
Petrifax Cement Coating, sold in San Francisco by Sherman Kimball, 503 Market St.
Biturine Co. of America,
74 California St., S. F.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Trus-Con Par-Seal, made by Trussed Concrete Steel Co. See advertisement for Coast agencies.
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT EXTERIOR FINISH
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 153.]
Concrewaltum Paint, manufactured by Goheen Company, Canton, O. Coast branches, San Francisco, Portland and Seattle.
Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Buswell's Steel and Concrete Paints
Oakland, Cal.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Medusa White Portland Cement, California Agents, the Building Material Co., Inc., 587 Monadnock Bldg., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT FLOOR COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing Agents on page 153.]
Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT GUN
Lilley & Thurston Co., distributors for Northern California .....Rialto Bldg., S. F.

CEMENT TESTS AND CHEMICAL ENGINEERS
Smith, Emery & Co....651 Howard St., S. F.
Robert W. Hunt & Co.,
418 Montgomery St., S. F.

CHURCH INTERIORS
Fink & Schindler.....218 13th St., S. F.

COAL CHUTES
Majestic Furnace Company, Sherman Kimball & Co., Inc.....507 Mission St., S. F.

CLOCKS—TOWER AND STREET
E. Howard Clock Company.....New York
For Pacific Coast agents see advertisement.

COOLERS AND HUMIDIFYERS
California Air Purifying Co.,
Monadnock Bldg

COLD STORAGE INSULATION
"Hydrex" Felt & Compound, manufactured by Hydrex Felt & Engineering Co., N. Y.; sold by Rolph, Mills & Co.,
Hansford Bldg., S. F.
Neponset Waterdyke Felt and Compound manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co.,
320 California St., S. F.

COMPOSITION FLOORING
Artolith Mfg. Company, 149 Turk St., S. F.
Fibrestone & Roofing Co.,
704 Market St., S. F.
H. M. Parry & Co., 145 Montgomery St., S. F.
Indestructible Floor Tiling Co., 251 Kearny St., S. F.
Lithoid Products Co., Merchants Exchange Bldg., S. F.

CONCRETE CONSTRUCTION
"Mushroom" System of Concrete Flat Slab Construction Industrial Engineering Co., Chronicle Bldg., S. F
H. M. Scarrett, Turk and Jones Streets, Los Angeles
Foster, Vogt Co .....Sharon Bldg., S. F.
Richard Keatnig & Son, 693 Mission St., S. F.
Petersen, H. L .....62 Post St., S. F.
Ransome Concrete Company,
Oakland and Sacramento
J. M. White Company....101 Post St., S. F.
F. J. R. Rickon.....1950 Geary St., S. F.
F. J. Klenck..... ... Sharon Bldg., S. F.

CONCRETE MIXERS
Austin Improved Cube Mixer Pacific Coast Offices, 338 Brannan St., S. F., the Beebe Company, Portland and Seattle, and P. B. Eagle, Los Angeles.
Foote Mixers sold by Edw. R. Bacon,
40 Natoma St., S. F
Ransome Mixers, sold by Norman B. Livermore & Co.... Metropolis Bank Bldg., S. F.
Smith Mixers sold by Parrott & Co., San Francisco, Los Angeles and Portland.
Wallace Concrete Machinery Co.,
Monadnock Bldg., S. F.
Marsh-Capron Mixers, sold by Langford, Bacon & Myers, Rialto Bldg., S. F.

CONCRETE PILES
Harron, Rickard & McCone.
Townsend Street, San Francisco.

CONCRETE POURING APPARATUS
Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

Specify... For Plastering

HOLMES DIAMOND SANTA CRUZ LIME

PHONE KEARNY 2220
Guaranteed Against Pitting or Popping

The Holmes Lime Co.
Monadnock Bldg., San Francisco

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle
Clinton Welded Reinforcing System, L. A. Norris, Monadnock Bldg., S. F.
"Kahn System," see advertisement on page 152 this issue.
International Fabric & Cable, represented by Western Builders' Supply Co., 155 New Montgomery St., S. F.
Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.
Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co....Rialto Bldg., S. F.
Twisted Bars, sold by Woods & Huddart, 444 Market St., S. F.

CONCRETE SURFACING
"Biturine," sold by Biturine Co. of America, 24 California St., S. F.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Buswell's Steel and Concrete Paints, Oakland, Cal.
"Concreta," sold by W. P. Fuller & Co., S. F.
Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.
Moller & Schumann...1023 Mission St., S. F.

CONTRACTOR'S EQUIPMENT
Burt E. Edwards,....1025 Phelan Bldg., S. F.
C. H. & E. Mfg. Co., Inc., Milwaukee, Wis., represented by Parrott & Co., S. F., Beebe Co., Portland, A. F. George, Los Angeles, E. P. Jamison, Seattle.

CONTRACTORS, GENERAL
Commary-Peterson Co., Inc., 46 Kearny St., S. F.
F. J. Klenck.....Sharon Bldg., S. F.
F. O. Engstrum Co., East Fifth and Seaton Sts., Los Angeles.
Foster, Vogt Co.....Sharon Bldg., S. F.
Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.
Geo. W. Buxton.....Hearst Bldg., S. F.
Hansen, F. L., 525 Monadnock Bldg., S. F.
Holm & Son.....Foxcroft Bldg., S. F.
D. J. Byron.....Lick Bldg., S. F.
McLaren & Peterson.....Sharon Bldg., S. F.
C. P. Moore Building Co., Sharon Bldg., S. F.
Northern Construction Co., Mills Bldg., S. F.
Higginsen Co., Inc., 804 Humboldt Bank Bldg., S. F.
Ransome Concrete Co., 1218 Broadway, Oakland
F. J. Rickon, C. E., 1859 Geary St., S. F.
Robert Trost, 26th and Howard Sts., S. F.
Scarrett, H. M., Jones and Turk Sts., S. F.
Williams Bros. & Henderson, Holbrook Bldg., S. F.
Burt T. Ousley.....311 Sharon Bldg., S. F.
Patrick Nelson Company, 2025 Addison St., Berkeley, Cal
Ward & Goodwin.....Sharon Bldg., S. F.

CORNER BEAD
"Prescott," sold by C. Georgensen, 336 Market St., S. F.
Union Metal Corner Company, 144 Pearl St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK
Grant Gravel Co., ...Williams Bldg., S. F.
Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., S. F.
Levensaler-Speir Corporation, 259 Monadnock Bldg., S. F.

CORK TILING
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. Pacific Coast office, Sharon Building, S. F., G. H. Freear, Mgr.

DAMP PROOFING COMPOUND
Biturine Co. of America, 24 California St., S. F.
Concrewaltum Paint, made by Goheen Mfg. Co., Canton, O., sold by Sherman, Kimball & Co., Inc., S. F., A. J. Capron, Portland, and S. W. R. Dalby, Seattle, Wash.
Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Lithoid Product Company, Merchants Exchange Bldg., S. F.
Trus-Con Dampproofing. See advertisement of Trussed Concrete Steel Company for Coast agencies.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.,.....First St., S. F.
Liquid Stone Paint Co., Phelan Bldg., S. F.

DISAPPEARING IRONING BOARDS
F. G. Cox.....933 Phelan Bldg., S. F.

DOOR HANGERS
Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works
Richards-Wilcox Mfg. Co.,..... Aurora, Ill.
Allith-Prouty Co., Danville Ill., 693 Mission St., S. F., and 412 E. 3rd St., Los Angeles

DOORS—DISAPPEARING
Pacific Tank & Pipe Co.,231 Berry St., S. F.

DOORS AND SHUTTERS
Kinnear Steel Rolling Doors and Shutters, Lilley & Thurston Co., Rialto Bldg., S. F.

DRAWING INSTRUMENTS
Kieffel & Esser Company, Second Street, near Market, S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

CALIFORNIA MARBLE

Seven Different Grades—Superior Finish—Moderate Price
Used in the New San Francisco Hall of Justice, Merchants Exchange Building Alaska Commercial Building, and others.

COLUMBIA MARBLE COMPANY
268 MARKET STREET, Rooms 201-202 SAN FRANCISCO, CAL.

"FIBRESTONE"

SANITARY FLOORING, WAINSCOT AND BASE. Laid Exclusively by
FIBRESTONE & ROOFING CO., 704 Market St. San Francisco Tel. Sutter 329

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELECTRICAL CONTRACTORS
American Electrical Engineering Co.
435 Golden Gate Ave., S. F.
Butte Engineering Co...683 Howard St., S. F.
Central Electric Co...185 Stevenson St., S. F.
Garden City Electrical Co.....San Jose, Cal.
Jno. G. Sutton Co.....243 Minna St., S. F.
Pacific Fire Extinguisher Company.
507 Montgomery St., S. F.

ELECTRICAL ENGINEERS
Hicks & Folte.....320 Market St., S. F.

ELEVATORS
Otis Elevator Company.
Stockton and North Point, S. F.
Van Emon Elevator Co...34 Natoma St., S. F.
Wells & Spencer Machine Co.,
173 Beale St., S. F.

ELEVATOR DOORS
Variety Mfg. Co., Chicago, C. Jorgensen & Co., Pacific Coast Distributors, 356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co.,
593 Market St., S. F.

ENGINEERS
F. J. Amweg.....700 Marston Bldg., S. F.
W. W. Breite.....Chunie Bldg., S. F.
I. C. Hurley..... 12 Geary Street, S. F.
Hunter & Hudson.....Sharon Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co.,
593 Market St., S. F.

FAUCETS
Glauber Brass Mfg. Co.

FIRE DOOR HARDWARE
Kortick-Falls Mfg. Co., 327 First St., S. F.
Allith-Prouty Co., Coast agencies, 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

FIRE ESCAPES
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, etc. Phone Market 1374; Home, J 3435. 370-84 Tenth St., S. F.
H. Johns-Manville Company, Branches in all Principal Coast Cities.

FIRE EXTINGUISHERS
Pacific Fire Extinguisher Co.,
507 Montgomery St., S. F.
Levensaler-Spier Corporation,
259 Monadnock Bldg., S. F.

FIREPLACE DAMPER
Head, Throat and Damper for open fireplaces. Colonial Fireplace Co., Chicago.
(See advertisement for Coast agencies.)

FIREPROOFING AND PARTITIONS
Gladding, McBean & Company,
Crocker Bldg., S. F.
Los Angeles Pressed Brick Co.,
Frost Bldg., L. A.
Roebling Construction Co., Crocker Bldg., S. F.
"Bestwall," manufactured by California Bestwall Co., Lilley & Thurston Co., distributors, Rialto Bldg., S. F.
Collins Metal Lath and Steel Studding, sold by Parrott & Co., S. F. and Los Angeles

FIREPROOFING AND PARTITIONS—Cont'd.
Levensaler-Spier Corporation,
259 Monadnock Bldg., S. F.

FIRE-PROOF PAINT
Liquid Stone Paint Co., Phelan Bldg., S. F.

FIREPROOF PARTITIONS
Rabbitt Partition Co., 34 Ellis St., S. F.

FIXTURES—BANK, OFFICE, STORE, ETC.
A. J. Forbes & Son...1530 Filbert St., S. F.
Fink & Schindler.....218 13th St., S. F.
C. F. Weber & Co., 365 Market St., San Francisco and 210 N. Main St., Los Angeles, Cal.

FLOORS
Indestructible Floor & Tiling Co.,
251 Kearny St., S. F.

FLOOR VARNISH
Berkhuetter and S. F. Pioneer Varnish Works,
816 Mission St., S. F.
R. N. Nason & Co...151 Potrero Ave., S. F.
Standard Varnish Works,
Chicago, New York and S. F.
Moller & Schumann Co.,
1022 Mission St., S. F.

FLOORS—CORK
Nonpariel Cork Tiling. David E. Kennedy, Inc., N. Y. Distributor for the Pacific Coast., G. H. Freeat, Sharon Building, S. F.

FLOORING—MAGNESITE
Fibrestone & Roofing Co.,
704 Market St., S. F.
Mallott, Peterson & Adams,
682 Monadnock Bldg., S. F.

FORMS FOR CONCRETE
Metal form work, sold by California Sales & Supply Co.....San Diego

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit,
Bowser & Co. .....612 Howard St., S. F.

GARBAGE CHUTE
Bill & Jacobsen.....524 Pine St., S. F.

GLASS AND GLAZING
W. P. Fuller & Co.,
San Francisco, Los Angeles and Portland.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co.....153 Berry St., S. F.
California Building Material Co.,
Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
Niles Sand, Rock & Gravel Co.,
Mutual Bank Bldg., S. F.

HARDWARE
Pacific Hardware & Steel Co., S. F. and L. A.
Richards-Wilcox Mfg. Co., ...Aurora, Ill.
Russwin Hardware, Joost Bros., S. F.
Window Adjusters, mfrd. by The Casement Co., 173 State St., North Chicago, Ill.
Allith Prouty Co., 693 Mission St., S. F., and 413 E. 3d St., Los Angeles.

HARDWOOD FLOORING
Strahle Mfg. Co.....Oakland, Cal.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.
Hardwood Interior Co., 554 Bryant St., S. F.

WATER HEATERS - PUMPS
BOILERS

F. HARVEY SEARIGHT
SHREVE BLDG. SAN FRANCISCO

WELLS AND SPENCER MACHINE CO.
F. M. SPENCER, SUCCESSOR
173-177 BEALE ST., SAN FRANCISCO
REPRESENTING
WESTERN ELEVATOR COMPANY
REPAIRS, INSPECTIONS AND DUMB WAITERS
TELEPHONES: KEARNY 664
HOME J 1124

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HARDWOOD LUMBER
Parrott & Co.....320 California St., S. F.
Strahle Mfg. Co.,
First St., betw. Washington & Clay, Oakland.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HEATERS—AUTOMATIC
Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Thos. Thieben & Co. .....667 Mission St., S. F.

LOCKERS
Keyloss Lock Co.,.....Indianapolis, Ind.

HEATING EQUIPMENT—VACUUM, ETC.
C. A. Dunham Co., Marshalltown, Iowa,
Western Division Office,
Monadnock Bldg., S. F.

HEATING AND VENTILATING
Atlas Heating & Ventilating Co.,
Fourth and Freelon Sts., San Francisco.
Fess System Co.....220 Natoma St., S. F.
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
General Engineering Company,
281 Natoma St., S. F.
Hoffman & Meusser,
1129-1131 Howard St., San Francisco.
J. C. Hurley.....12 Geary Street, S. F.
S. T. Johnson Co....1334 Mission St., S. F.
Mangrum & Otter, Inc., 507 Mission St., S. F.
Jno. G. Sutton Co....243 Minna St., S. F.
Pacific Blower & Heating Co.,
Monadnock Bldg., S. F.
Pacific Fire Extinguisher Company,
507 Montgomery St., S. F.
Petersen-James Co....710 Larkin St., S. F.

HOTELS
The Angelus, Loomis Bros.....Los Angeles

HOLLOW BLOCKS
Atlas Stone Co.....663 Mission St., S. F.

INGOT IRON
American Rolling Mill Co., Middleton, Ohio.
California Corrugated Culvert Co.,
5th and Parker Sts., West Berkeley.

INLAID FLOORS
Hardwood Interior Co., 554 Bryant St., S. F.

INTERIOR WALL FINISH
Satina mfg'd. by C. H. Brown Paint Co.,
F. A. Frisius, 341 Lincoln ave., Alameda, California.

INSPECTIONS AND TESTS
Robert W. Hunt & Co.,
418 Montgomery St., S. F.
Smith, Emery & Co. Inc.,
651 Howard St., S. F.

INSULATING MATERIALS
Armstrong Cork Co..... Pittsburg, Pa.

INTERIOR DECORATING
Allith-Prouty Co.....693 Mission St., S. F.
The Tozer Company, 228 Grant Ave., S. F.

JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.
Kortick-Falls Mfg. Co.,
327-343 First St., S. F.

KEENE CEMENT
American Keene Cement,
Levensaler-Speir, Corporation,
259 Monadnock Bldg., S. F.

LIME
Holmes Lime Company,
Monadnock Bldg., S. F.
Shasta Lime Products Company,
1550 Bryant St., S. F.

LIGHTING FIXTURES
Adams, Hollopeter & Mallett,
353 Sutter St., San Francisco
Bauer Fixture Co.....49-55 Jones St., S. F.

LIGHT, HEAT AND POWER
Pacific Gas & Elec. Co..445 Sutter St., S. F.
Great Western Power Co.,
233 Post Street, San Francisco

LUMBER
Sunset Lumber So.....Oakland, Cal.
Santa Fe Lumber Co.,
Seventeenth and De Haro Sts., S. F.

MANTELS
Mangrum & Otter ....561 Mission St., S. F.
Thos. F. Rigney, ...9 City Hall Ave., S. F.

MARBLE
Columbia Marble Co...268 Market St., S. F.

MARBLE CARVING
Florentine Art Studio.. 932 Vallejo St., S. F.

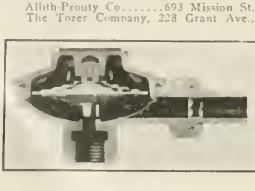
METAL AND STEEL LATH
Atlantic Fireproofing Co.,
Pacific Bldg., S. F.
Baker & Hamilton, 433 Brannan St., S. F.
Roebling Construction Co.,
San Francisco and Los Angeles
L. A. Norris & Co., Monadnock Bldg., S. F.

METAL CEILINGS
Berger Mfg. Co....1120 Mission St., S. F.
Ames-Irwin Co., Inc.,
Eighth and Irwin Sts., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office with M. G. West Co., 353 Market St., S. F

METAL FURNITURE
The Keyless Lock Co.....Indianapolis, Ind.
Van Dorn Iron Works Co..... Cleveland, O.
M. G. West Co. . . . . 353 Market St., S. F

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent . . Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co..... Treat Ave. and 19th St., S. F



The Dunham Radiator Trap
Makes Good on Every Essential Point, Send for Catalog
Western Division Office
C. A. DUNHAM CO. - 602-18 Monadnock Building
SAN FRANCISCO PHONE SUTTER 2548

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
S. T. Johnson Co...1334 Mission St., S. F.
Fess System Co.....220 Natoma St., S. F.
T. P. Jarvis Crude Oil Burner Co.,
275 Connecticut St., S. F.
Blaisdell Machinery Co. 507 Mission St., S. F.
Simplex Crude Oil Burners, Furnaces and Ranges, manufactured by American Heat & Power Co., 607 First National Bank Bldg., San Francisco

OPERA CHAIRS
C. F. Weber & Co....365 Market St., S. F.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal & Wire Co.,
349 Seventh St., S. F.
I. G Braun.....Chicago and New York
Ralston Iron Works.
20th and Indiana Sts., S. F.
Standard Iron Works.
235-39 Shinley St., S. F.
Golden Gate Structural & Ornamental Iron Works .....1479 Mission St., S. F.
C. J. Hillard Company, Inc.,
19th and Minnesota Sts., S. F.
Shreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Sartorius Company..15th and Utah Sts., S. F.
West Coast Wire & Iron Works.
861-863 Howard St., S. F.

OVENS—BREAD AND PASTRY
New Era Oven Co., 2560 Sutter St., S. F.

PAINT FOR STEEL STRUCTURES
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Buswell's Steel and Concrete Paints.
Oakland, Cal.
Carbonizing Coating, made by Goheen Mfg. Co., Canton, O. See advertisement for Coast distributors.
Truss-Con Bar-Ox, Trussed Concrete Steel Co. See adv. for Coast agencies.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

PAINT FOR CEMENT
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.), [See adv. in this issue for Pacific Coast agents.]
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Truss-Con Stone Tex., Trussed Concrete Steel Co. See advertisement for Coast agencies.
Liquid Stone Paint Co., Hearst Bldg., San Francisco, Los Angeles and San Diego
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Goheen Mfgr. Co. .....Canton, O.
See advertisement for Coast distributors

PAINTS, OILS, ETC.
Bass-Hueter Paint Company.
Mission, near Fourth St., S. F.
R. N. Nason Company.....San Francisco
"Biturine," sold by Biturine Co. of America,
24 California St., S. F.
Goheen Mfrg. Co. .....Canton, O.
See advertisement for Coast distributors
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co.,
S. F. and Los Angeles
Moller & Schumann Co.,
1022 Mission St., S. F.
Paraffine Paint Co....38-40 First St., S. F.
Standard Varnish Works represented by W. P. Fuller & Co., S. F. and Los Angeles.

PAINT PRODUCTS
Felix Gross Co.....440 Ninth St., S. F.
Stockton Paint Company.....Stockton, Cal.

PAVING BRICK
Vallejo Brick & Tile Co.
343 Sansome St., S. F.

PHOTO ENGRAVING
California Photo Engraving Co.,
121 Second St., S. F.

PHOTOGRAPHY
R. J. Waters Co.....717 Market St., S. F.
Walter Scott.....358 Market St., S. F.

PIPE—CORRUGATED INGOT IRON
California Corrugated Culvert Company, Los Angeles and West Berkeley.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA.
N. Clark & Sons
212 Natoma St., San Francisco
Gladding McBean & Co., Crocker Bldg., S. F.
Pacific Sewer Pipe Company,
I. W. Hellman Bldg., Los Angeles
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

PLASTER BOARD
Colonial Wall board manufactured by Mound House Plaster Co., Levensaler-Speir Corporation.....59 Monadnock Bldg., S. F.

PLASTERING CONTRACTORS
Geo MacGruer....319 Mississippi St., S. F.

PLUMBING
Jno. G Sutton Co.....243 Minna St., S. F.
Peters & James Co.....710 Larkin St., S. F.
Wetzel & Grass .....105 Fulton St., S. F.
Wittman, Lymen & Co., 340 Minna St., S. F.
Coleman, Alex., 706 Ellis St., S. F.

PLUMBING FIXTURES, MATERIALS, ETC.
Crane Co....Second and Brannan Sts., S. F.
Jno. Douglas Co....371 Mission St., S. F.
N. O. Nelson Mfg. Co.,
978 Howard St., S. F.
P. F. Howard Co.,
Second and Folsom Sts., S. F.
Kohler Co.....1001 Monadnock Bldg., S. F.
Glauber Brass Mfg. Co.,
Cleveland, O., 1107 Mission St., S. F.
Louis Lipp Company, Winton Place, Ohio.
Pacific Coast Office, 693 Mission St., S. F.
Mark-Lally Co..First and Folsom Sts., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent .....135 Kearny St., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works,
Mills Bldg., S. F.

POWER PLANT EQUIPMENT
F. Harvey Searight...817 Shreve Bldg. S. F.

PULLEYS, SHAFTING, GEARS, ETC.
Meese and Gottfried Company.....San Francisco, Seattle, Portland and Los Angeles

RAILROADS
Southern Pacific Co.....Flood Bldg., S. F.
Western Pacific Railroad..Mills Bldg., S. F.

ROAD MACHINERY
Langford, Bacon & Myers.
Rialto Bldg., S. F.
Iroquois Iron Works (Barber Asphalt Company) .....Head Bldg., S. F.

ROAD CONTRACTORS
Engineering and Construction Co.,
Timkin Bldg., San Diego, Cal.

REFRIGERATORS
McCray Refrigerators, sold by Nathan Dohrmann Co., Geary and Stockton, Sts., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
Lilley & Thurston Co., Rialto Bldg., S. F.
C. F. Weber & Co. ....365 Market St., S. F.

ROOFING AND ROOFING MATERIALS
Ames-Irwin Co., Inc.,
Eighth & Irwin Sts., S. F.
Biturine Co. of America,
24 California St., S. F.
J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.
Rialto Bldg., S. F.
Mallott, Peterson & Adams,
682 Monadnock Bldg., S. F.
Felix Gross Co. 440 9th St., S. F.

W. F. AVERY, Prop. PHONE KEARNY 5319

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ORNAMENTAL IRON BRASS AND BRONZE

Store Fronts, Elevator Enclosures, Fire Escapes, Grille Work, etc.

OFFICE AND WORKS 235-237-239 SHIPLEY STREET SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ROOFING & ROOFING MATERIALS—Cont'd.
Grant Gravel Co.....Williams Bldg., S. F.
L. B. Hooker Co., 1530 Howard St., S. F.
"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Monadnock Bldg., S. F.
Fibrestone & Roofing Co., Mutual Savings Bank Bldg., S. F.
Genasco Ready Roofing, sold by Parrott & Co.....320 California St., S. F.
Mackenzie Roof Co., 425 15th St., Oakland.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
United Materials Co.... Balboa Bldg., S. F.

ROOFING TIN
American Sheet & Tin Plate Co., Pacific Coast representatives, U. S. Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

RUBBER TILING AND MATTING
New York Belting & Packing Co., 129 First St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Crocker Bldg., S. F.
Niles Sand, Gravel and Rock Co., Mutual Bank Building, S. F.

SANITARY DRINKING FOUNTAINS
N. O. Nelson Mfg. Co., 978 Howard St., S. F.

SASH CORD
Puritan Sash Cord Company. (For Coast Agents, see advertisement
Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Company, 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co.....365 Market St., S. F.
512 S. Broadway, Los Angeles.

SHEATHING AND SOUND DEADENING
"Hydrex" Waterproof Building Papers, "Hydrex" "Sanifor" Deafening Felt, manufactured by Hydrex Felt & Eng. Co., N. Y. and sold by Rolph, Mills & Co., Hansford Bldg., S. F.
Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.....Rialto Bldg., S. F.
Samuel Cabot Mfg. Co., Boston Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK
Berger Mfg. Co.....1120 Mission St., S. F.
Capitol Sheet Metal Works, 1927 Market St., S. F.
Dunlevy & Gettle....79 City Hall Ave., S. F.
Hibernia Sheet Metal Works, 219 Seventh St., S. F.
Olive & Cox.....85 Irwin St., S. F.
Western Furnace & Cornice Co., 1645 Howard St., S. F.
Yager Sheet Metal Works, Oakland.

SHEET COPPER
C. G. Hussey & Co....565 Folsom St., S. F.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Waterhouse & Price, San Francisco, Los Angeles and Portland.

SIDEWALK LIGHTS
J. A. Steedman.....Phelan Bldg., S. F

SKYLIGHT CORNICES, ETC.
Hibernia Sheet Metal Works, 219 Seventh St., S. F.
Olive & Cox.....85 Irwin St., S. F.

SPIRAL CHUTE
The Haslett Spiral Chute Co., 310 California St., S. F

STEEL AND IRON—STRUCTURAL
Central Iron Works...621 Florida St., S. F.
Judson Manufacturing Company, 819 Folsom Street, San Francisco.
Brode Iron Works...31 Hawthorne St., S. F.
Mortenson Consetion Co., 19th and Indiana Sts., S. F.
J. L. Mott Iron Works, D. H. Gulick, Agt., 135 Kearny St., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Pacific Structural Iron Works, Structural Iron and Steel, Fire Escapes, Etc. Phone Market 1374; Home, J 3435...370-84 Tenth St., S. F.
Ralston Iron Works, Twentieth and Indiana Sts., S. F.
Schrader Iron Works .....San Francisco
U. S. Steel Products Company, Rialto Bldg., S. F.
Schreiber & Sons Co., represented by Western Builders Supply Co., S. F.
Western Iron Works....141 Beale St., S. F.
Woods & Huddart ...444 Market St., S. F.

H. W. ELLIS, Pres. & Gen'l Mgr. C. F. JOHNSON, Vice-Pres. P. F. JOHNSON, Sec'y & Treas.

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Concrete Flat Slab Construction

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Vancouver, B. C. - - - - - A. P. Hueckel, Vancouver Block

Agencies in all principal cities.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

STEEL BARS FOR CONCRETE REINFORCEMENT
Baker & Hamilton,
4th and Brannan Sts., S. F.
Judson Manufacturing Company,
819 Folsom Street, San Francisco
Kahn and Rib Bars, made by Trussed Concrete Steel Co. See advertisement for Coast agencies.
Woods & Huddart ....444 Market St., S. F.

STEEL FURNITURE
The Keyless Lock Co.....Indianapolis, Ind.

STEEL MOULDINGS FOR STORE FRONTS
J. G. Braun, 537 W. 35th St., N. Y., and
615 S. Paulina St., Chicago.

STEEL PROTECTIONS FOR CONCRETE
Steel Protected Concrete Co.,
Represented by Lilley & Thurston, S. F.

STEEL STUDDING
Collins Steel Partition, Parrott & Co., S. F.
"Leseo," Metal Stud, Levensaler-Speir, Corporation,.....Monadnock Bldg., S. F.

STONE
Parry Stone Co., "Sanpeta," "Colete," and "manti" white stone.
417 Montgomery St., S. F.

STONE MANTELS
Atlas Stone Company, Inc.,
663 Mission St., S. F.

STORAGE SYSTEMS
S. F. Bowser & Co., 612 Howard St., S. F.

STORE FRONTS
Kawneer System, Kawneer Manufacturing Company, 420-422 Turk St., S. F.; branches in Portland, Spokane, Seattle and Los Angeles.
Hester System, sold by Western Builders' Supply Co., 155 New Montgomery St., S. F.

SURETY BONDS
Globe Indemnity Co.,
508 California St., S. F.
Mass. Bonding & Insurance Co.,
First Nat'l Bk. Bldg., S. F.
Fidelity & Deposit Co. of Maryland,
Mills Bldg., S. F.

TEMPERATURE REGULATION
Johnson Service Co., Monadnock Bldg., S. F.

TILING CORK
Nonpareil Cork Tiling, David E. Kennedy, Inc., N. Y. distributors. Pacific Coast Office, Phelan Bldg., S. F.. G. H. Freear, Mgr.

TERRA COTTA CHIMNEY PIPE
Dunlevy & Gettle....79 City Hall Ave., S. F.
Gladding-McBean Co....Crocker Bldg., S. F.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter....561 Mission St., S. F.
Thos. F. Rigney....9 City Hall Ave., S. F.

TILE
Indestructible Floor & Tiling Co.,
251 Kearny St., S. F.

TILE FOR ROOFING
Fibrestone & Roofing Co.,
Mutual Savings Bank Bldg., S. F.
Gladding, McBean & Company,
Crocker Bldg., S. F.
United Materials Co.....Balboa Bldg., S. F.

TIN PLATES
American Tin Plate Company,
Rialto Bldg., S. F.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
N. & G. Taylor Company, Philadelphia, Coast branch.....Chronicle Bldg., S. F.

VACUUM CLEANERS
American Agencies Co., 501 Market St., San Francisco, 608 S. Olive St., L. A.
American Agencies, Ltd., 501 Market St., S. F.
Bell & Jacobsen, ... .524 Pine St., S. F.
The Vak-Klean Vacuum Cleaner, Pneuelectric Co., Pacific Coast Agts., 452 Larkin St., S. F.
Sanitary Vacuum Supply Company, 1601-3 Broadway, and 1600-2 Telegraph Ave., Oakland, Cal.
Giant Stationary Suction Cleaner, manufactured by Giant Suction Cleaner Co., 731 Folsom St., S. F. and 3d and Jefferson Sts., Oakland
The Blaisdell Machinery Co.,
347 Mission St., S. F.
General Engineering Company,
281 Natoma St., S. F.

VACUUM CLEANERS—Continued.
"Tuec" Air Cleaner, manufactured by United Electric Co.....523 Mission St., S. F.
"Rotrex" Cleaners, Guernsey & Wheeler, district managers,... Rialto Bldg., S. F.

VACUUM HEATING
Van Auken System of Vacuum Heating,

VALVES
Jenkins Bros.....247 Mission St., S. F.

VALVE PACKING
"Palmetto Twist," sold by H. N. Cook Belting Co.....317 Howard St., S. F.

VARNISHES
S. F. Pioneer Varnish Works,
816 Mission St., S. F.
Moller & Schumann Co.,
Brooklyn, N. Y., Chicago and S. F.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co....365 Market St., S. F.
Eriesson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents...356 Market St., S. F.

VENTILATORS AND SHEET IRON
Meurer Bros. Co., A. H. McDonald, Coast Representative.....630 Third St., S. F.
New Era Dustless Mfg. Co., Railway Exchange, Chicago, Ill.

WALL BEDS
Marshall & Stearns Co.,
1154 Phelan Bldg., S. F.
Ideal Disappearing Wall Bed Co,
Phelan Bldg., S. F.

WALL BOARD
California Colonial Wall Board, mfrd. by Mound House Plaster Co.
259 Monadnock Bldg., S. F.
Bestwall, mfr'd by California Bestwall Company, Lilley & Thurston Co., distributors, Rialto Bldg., San Francisco.

WATER HEATERS
Jos. Thieben Co., agents Pittsburg Heaters,
667 Mission St., S. F.
F. Harvey Searight.....Shreve Bldg., S. F.
Humphrey Heater,
565 N. Rose St., Kalamazoo, Mich.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Concrewaltum, made by Goheen Mfg. Co., Canton, O. See advertisement for Coast distributors.
Fibrestone & Roofing Co.,
Mutual Savings Bank Bldg., S. F.
Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Liquid Stone Paint Co., Hearst Bldg., S. F.
Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co. .....Rialto Bldg., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Building Material Co., Inc.,
583 Monadnock Bldg., S. F.
Buswell's Steel and Concrete Paints,
Oakland, Cal.

WHITE ENAMEL FINISH
H. M. Perry & Co., 145 Montgomery St., S. F.
"Satinette," W. P. Fuller & Co.,
S. F. and all principal Coast cities.
Trus-Con Sno-wite, manufactured by Trussed Concrete Steel Company. See adv. for Coast distributors.

WINDOWS, REVERSIBLE, ETC
Tabor Sash Fixture Co., C. Jorgensen Co., Agents, 356 Market St., S. F.
The "Hold-fast" Bulldog and "Hookfast" Window Adjusters, mfr'd by The Casement Hardware Co., 175 State St., North Chicago, Ill.
Casement Co.,
175 State St., North, Chicago, Ill.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., S. F.

WOOD MANTELS
Fink & Schindler.....218 13th St., S. F.
Mangrum & Otter .561 Mission St., S. F.
Thos. F. Rigney . . 9 City Hall Ave., S. F.

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GALVANUM PAINT	The ONLY paint made that will adhere for years and protect Galvanized Iron.
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ASBESTOS ORE PAINT No. 1180	A fire-proofing paint, a paint preservative of wooden trestles, wooden railroad bridges, a fire resistant or Fire Proofing Paint.

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Lewers & Cooke, Ltd.		Honolulu H. I.
Takata & Co.	No. 1, Yurakucho Ichome	Tokio, Japan

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Waterproof Brick Stains
Conservo Wood Preservative, etc.

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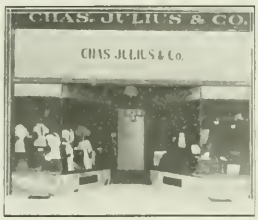
P. H. Mathews Paint House, Los Angeles
Timms, Cress & Co., Portland
S. W. R. Daily, Seattle, Tacoma and Spokane

From 1860 to 1913



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These two photographs show a typical case of modernizing. All along the Pacific Coast, KAWNEER (the Pacific Coast Store Front) has made hundreds of such transformations. KAWNEER is the Architect's and Builder's choice — it's practical—can be adapted to any and all types of Fronts, big and little, and enables you to carry out your own ideas.

Just because KAWNEER was the first — the original metal Store Front it doesn't make us believe that you should not buy any other construction, but the very success of KAWNEER in such a multitude of stores does give us grounds to make pretty broad claims does lead us to expect you, in justice to yourself, to use KAWNEER.

Kawneer STORE FRONTS

We want to show you more real facts about KAWNEER. We have compiled a book for you—it shows photographs of many of the finest Store Fronts in the country together with sectional drawings and a comprehensive description of KAWNEER.

Branches in Portland, Ore.
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and all other principal cities.

KAWNEER MANUFACTURING CO.

Francis J. Plym, President

420-422 Turk Street, San Francisco

Plate A-19-A "COUNTESS" BATH TUB.

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KOHLER

Porcelain Enameled Iron Sanitary Ware

Sizes	5′	5½′	6′
Width of Rim			43/4″

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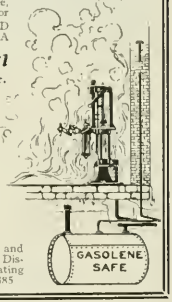
STORE THIS INFLAMMABLE LIQUID UNDERGROUND IN A

Bowser Safe Oil Storage System

Nature's way — where the temperature hovers close around 57 deg. all the year. It does no. matter whether it is "zero" or hot enough to melt the pump, it will not explode. Over a million satisfied users in twenty-eight years and not a fire traceable, directly or indirectly, to the use of Bowser equipment—they simply cannot explode, because they are built to conform to that measure of safety prescribed by the National Board of Fire Underwriters.

When in the market remember the name "BOWSER." Send for illustrated booklet, showing some exceptionally severe fire-tests. It will interest you. Free for the asking.



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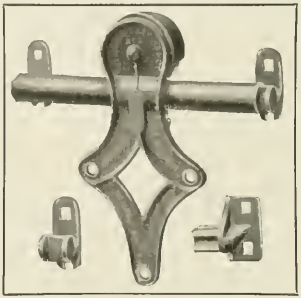

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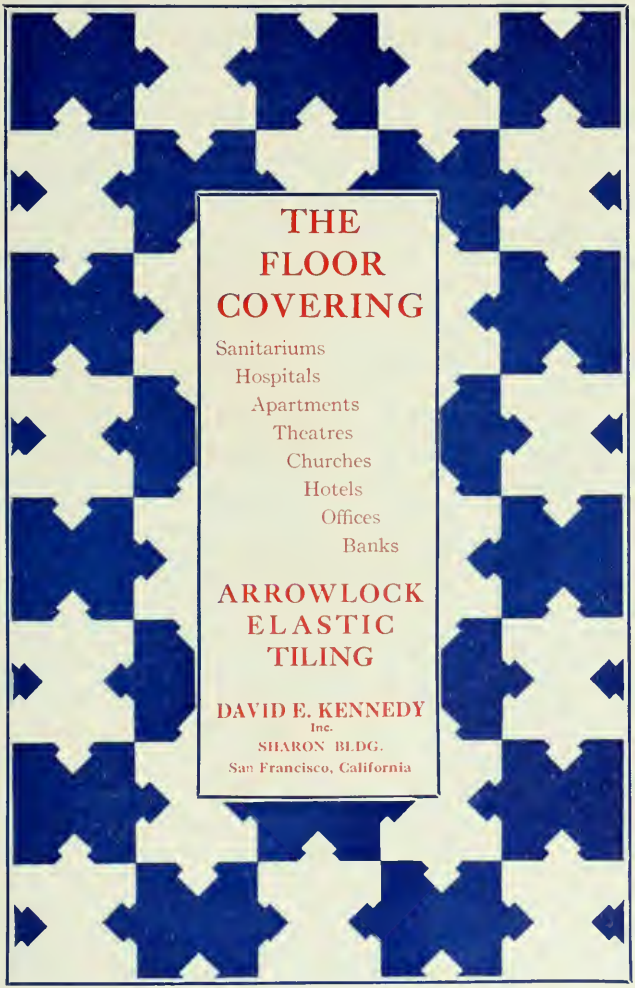
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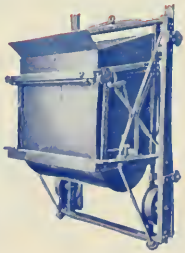

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IT CAN'T BE——————————FIGURE IT OUT

Mineral products that will properly combine to make a perfect damp-proofing—
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That's Liquid-Stone

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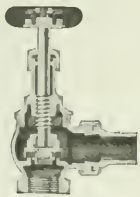

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Use **PALMETTO TWIST** on all the valves, and you will not have to repack so often.

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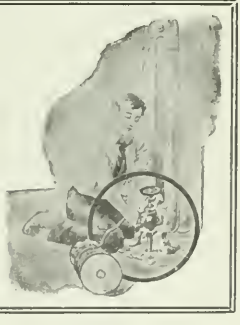

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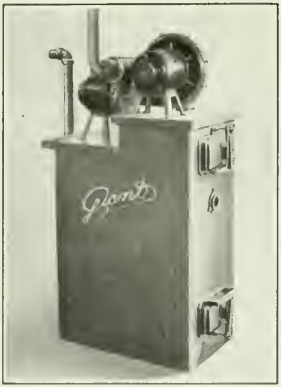

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it means scientifically, positively
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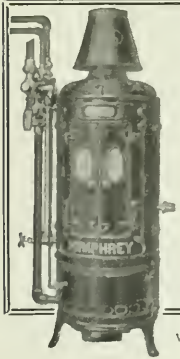

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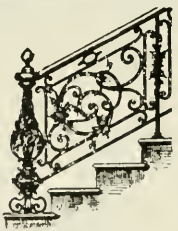

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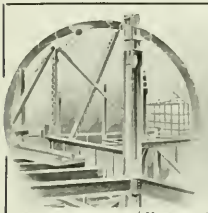

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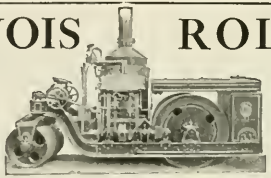

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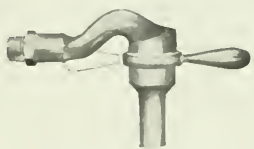

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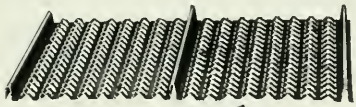

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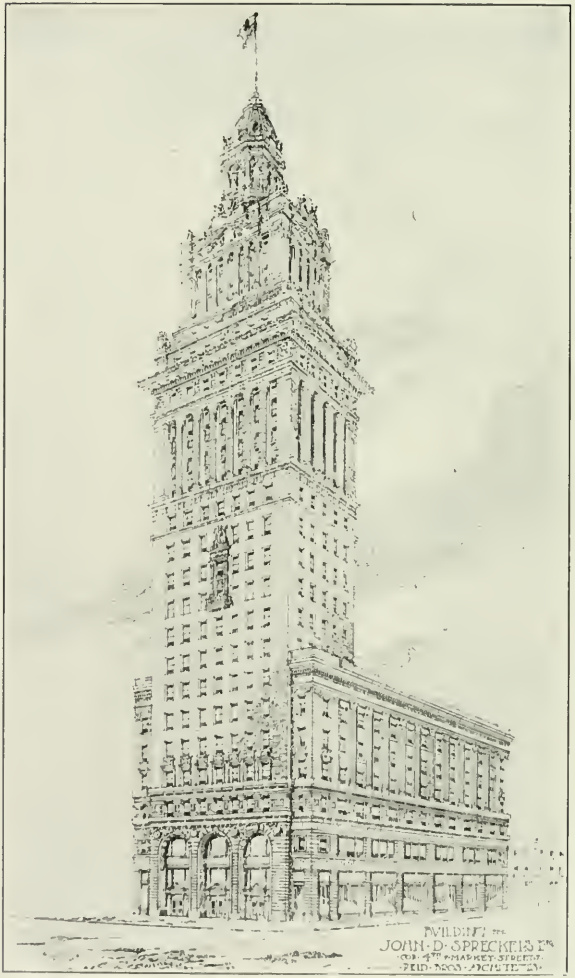

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The Architect and Engineer
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THE
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Pacific Coast States

VOL. XXXII. APRIL, 1913. No. 3

A Criticism of Some of the Work Shown at the Annual Exhibition of San Francisco Architectural Club

By B. J. S. CAHILL, A. I. A.

THE drawings and plaster models of the Panama-Pacific International Exposition buildings alone constitute an exhibit of more interest and importance to the whole Pacific Coast than any other preceding it. When, to this is added a selected list of current architectural enterprises of conspicuous merit, in addition to the final scheme for the Civic Center, we have a combination of events of greater moment than is likely to recur for many a long year. Meantime it will take a year or two to realize the first and last mentioned of these projects. As they take shape, one after another, they will, of course, furnish a sort of continuous performance of the architects' craft exercised on the largest scale towards the noblest ends under conditions of the most liberal endowment. Whether in the transient and fleeting forms embodying the Exposition, or in the more permanent enterprises of the Civic Center, both of these really magnificent events will live always as expressions of our opulent life, as examples of our technical skill, and as standards of civic magnificence to which our imperial democracy may fittingly aspire.

* * *

Most of us can remember, some year ago, when mineral oil was first discovered here in paying quantities. Everybody talked of oil and oil wells all day long. We had an epidemic of the subject. To those not actually in the game, the thing got to be a nuisance. There was so much talk and excitement, so many crazy schemes floated, so much speculation, exaggeration and lying that sober-minded people got disgusted. Suddenly, as it seemed to me, the whole matter died—disappeared from the public eye, and we heard no more of oil. The subject was apparently as obsolete as the Belgian hare. And then a year or two afterwards we woke up to the amazing fact that California was the leading oil State in the whole American Union!

In some such way, although the parable is by no means perfect, I seem to see the growth of the Exposition or the architectural shell which contains, embodies and expresses the Exposition.

I remember the tiresome "talk" period of the project. The wranglings, debates, foolish propositions, dissentions, scandals; they were all in evidence. There were cliques, factions and jealousies. Individual intrigue, personal rancour and petty politics all had a hand in creating what seemed a hopeless mix up. Onlookers despaired of any noble outcome, and predicted nothing worthier than a monstrous assemblage of stuccoed and

bedizened pavilions flanking, a riotous and vulgar midway. It looked like it. But in all the ferment, heat and moilings some process of clarifying was at work. Scum and residue being removed somehow.

"Out of the measureless grossness and the slag" came forth the gem perfection, to paraphrase Walt Whitman.

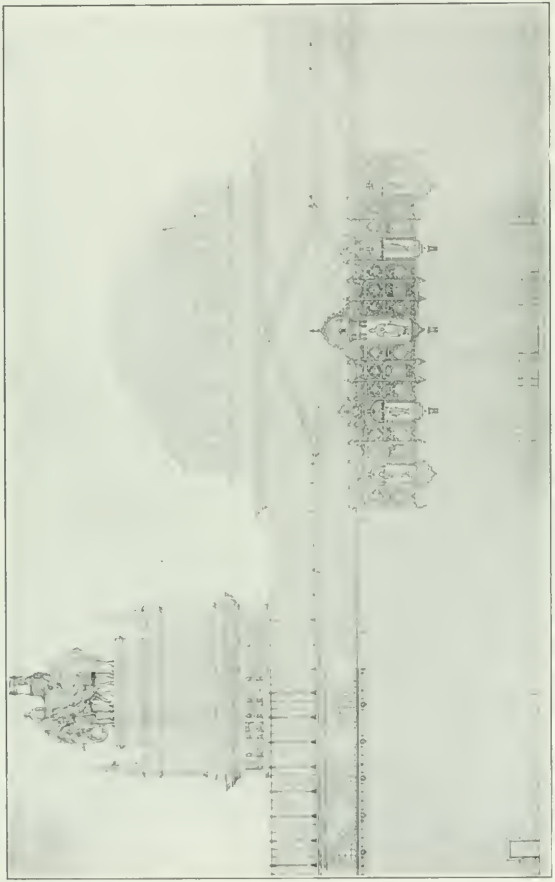
It is indeed a remarkable thing to contemplate, but after a long period of incredible effort, mutual surrender, co-operation, conciliation and the selecting and grouping of adequate men for the task, a working force eventually got in control and the architectural scheme became possible. But not until many, very many, trials, essays and sketches were proposed, argued upon and rejected did anything like a masterful diagram begin to reveal itself. I have tried to trace the first germs of this parti or diagram. It seems to have evolved and to have been the joint work of the whole Architectural Commission. It is indeed a masterful idea, and it would be a great pleasure to trace its origin and reveal its parent. The right diagram or layout is so much more important than the average architect even realizes that I will quote a notable sentence from the late Daniel H. Burnham on the subject. Speaking at the London Town Planning Conference of 1910, he said: "Remember that a noble logical diagram, once recorded, will never die; long after we are gone it will be a living thing, asserting itself with ever growing insistency, and, above all, remember that the greatest and noblest that man can do is yet to come, and that this will ever be so, else is evolution a myth."

This diagram or layout then bears the same relation to the finished Exposition that the bones of an organism do to the living creature. The bone comes first in creation although often it is the last thing that appeals to the vision. You can at once pick your big man whether artist, sculptor or architect, by the instinctive way that he builds upon the right bony structure.

Broadly speaking, the Exposition proper is not wholly a group of buildings with architectural exteriors brought into juxtaposition in the open air. It is rather a huge rectilinear mass of building into the interior of which blocks of open air are introduced, lined with architecture. And these courts are isolated from each other and conceived in contrast rather than in harmony. The whole scheme is the reverse and opposite of the usual one, bearing in a curious way something the relation that a negative photograph does to a positive print. In fact, if one looks at the plan with half closed eyes it is not difficult to read solid pavilions for open courts and to interpret the dark rectangles of the exhibit space as the parterres and gardens in between.

All this is not new of course. It is as old as Egypt and the Orient where the idea receives its most amazing development. For Exposition purposes it has several advantages. For one thing, interior architecture around a court whose colonnades and cornices return to us on inner angles instead of disappearing around outer corners, gives one a more complete and overwhelming expression. The scale and motives of the orders used not being in competition with all outdoors, acquire emphasis and power from being near and big.

Another advantage lies in the fact that in the main, each court within certain limits, is sufficiently isolated to allow of a separate, even a wholly different design. By a succession of contrasts in color, form and detail one is lured on from vision to vision so you can "climb to Paradise by the stairway of surprise." Of course the courts are not wholly enclosed, especially on the south where the sun will penetrate the scheme and on the north when an occasional vista of the marine shores across the water will refresh the eye. Finally, and let us say it with the soft pedal, the inner



Small Entrance, Facade Facing Bay
Bliss & Faville, Architects

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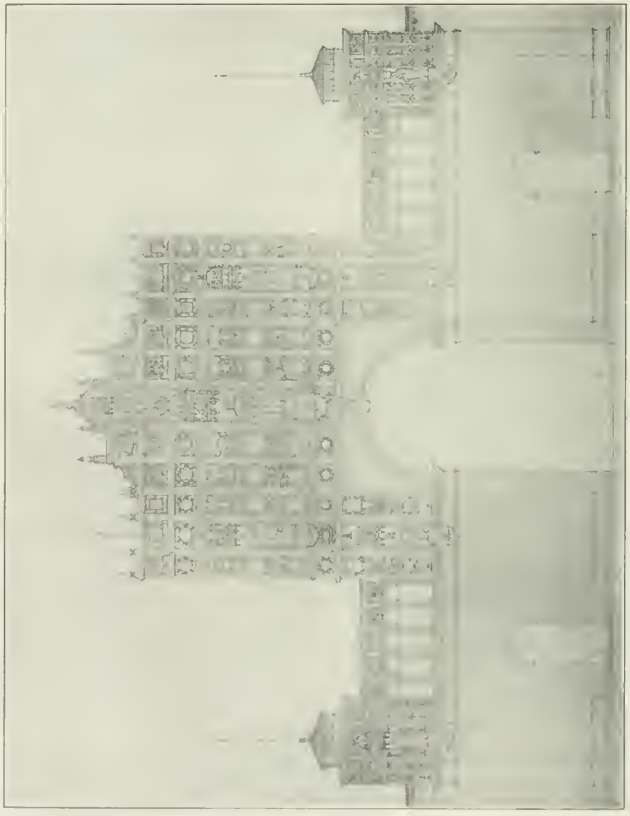

Gate of Columbus, Elevation Facing Bay
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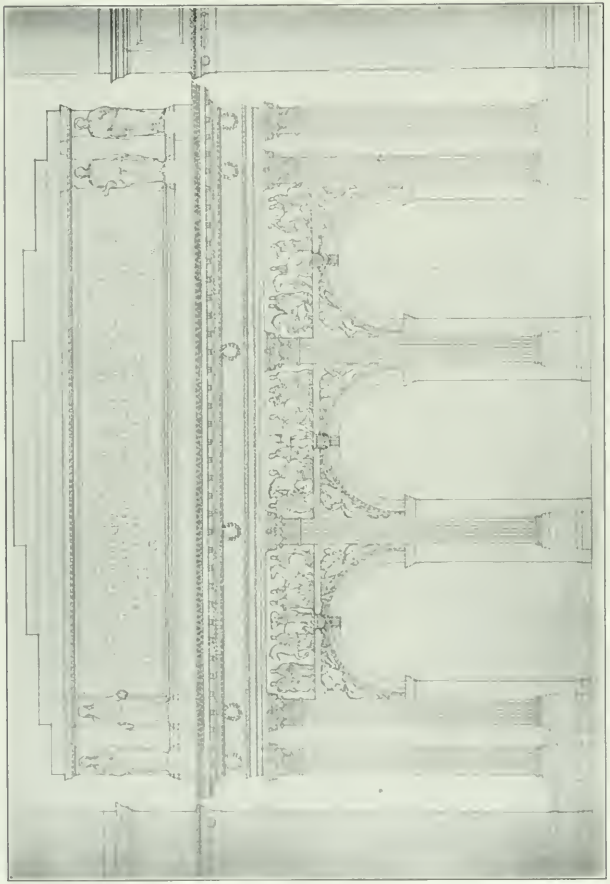

Entrance on West Front
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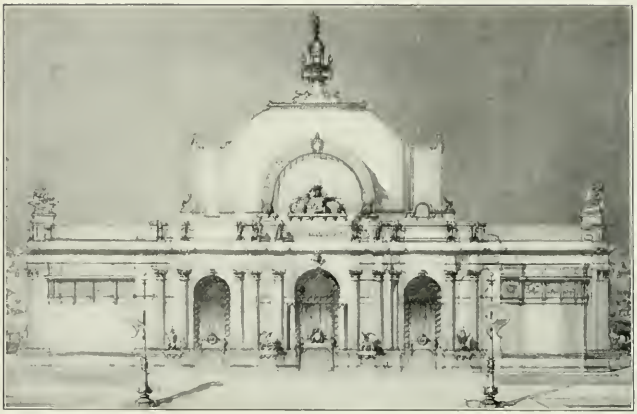

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Motor Transportation Building
Geo. A. Lansburgh, Architect

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Machinery Hall
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North Gate to Court of Four Seasons
Bliss & Faville, Architects

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court arrangement will be best appreciated by those of us who have lived here longest.

The note struck by the Exposition at large in spite of the variety of the inner courts, is after all, harmony. Harmony wrought by the spell of color, the subdued splendor of which promises to be a revelation. The walls throughout, as well as the walks and driveways, will be toned to the broken gray ochre of travertine stone which is the tone of old gold without luster and in shadow. Dull gold and dark ivory will sustain the high lights of the buildings in the sun; and red tile blued by distance will unite all the roofs in one wash of venetian pink when viewed from the nearby hills. Domes and pinnacles will reflect the sun glow; glass roofs will sparkle at intervals and the whole "Golden City" will lie serene on a floor of dark verdure by the straight margin of the bay.

The courts in detail surprise one by their serious character, their beauty and dignity. In France an Exposition offers a fine outlet for the prodigal talent with which Paris is absolutely congested. While we may as well

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German House Association Building, San Francisco *Frederick H. Meyer Architect*

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Frederick H. Meyer, Architect

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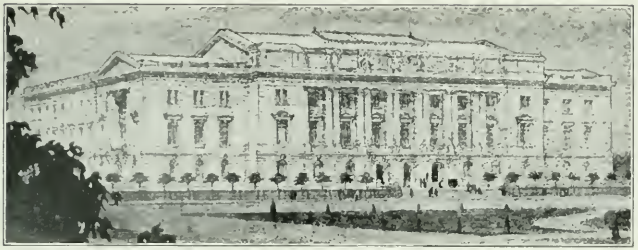

Sketch for State Printing Office Building (permanent)
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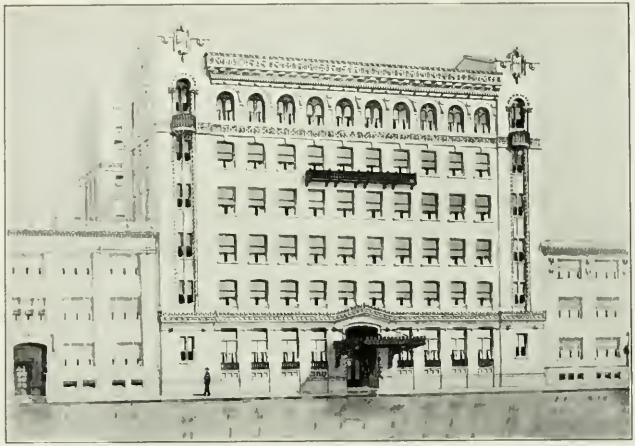

Proposed San Francisco Apartment House · *August Nordin Architect*

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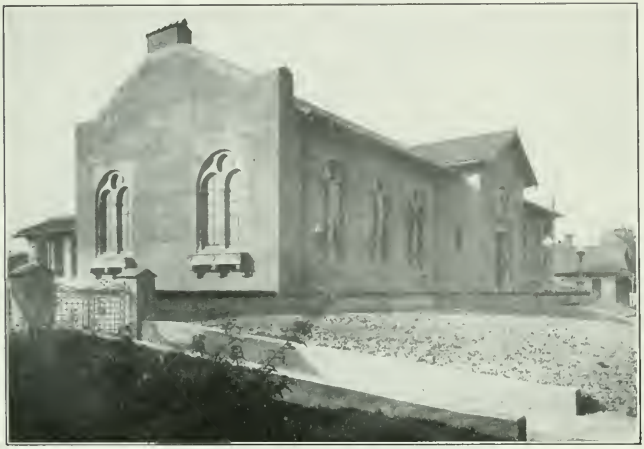
Native Sons Building,
San Francisco
Righetti & Headman,
Architects.
E. H. Hildebrand,
Associate

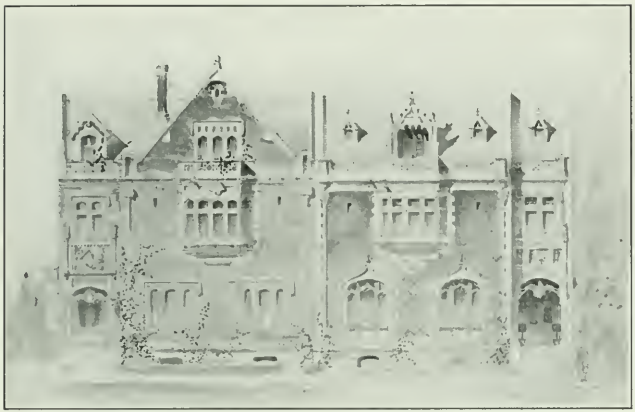


Albina Branch Carnegie Library, Albina, Oregon
Ellis F. Lawrence, Architect

Residence of Mr. F. W. Houts, Oakland
Claude B. Barton, Architect

E. A. Wasserman Apartments, San Francisco
Edward G. Garden, Architect

Fraternity Home, Berkeley, California
Charles Peter Weeks, Architect



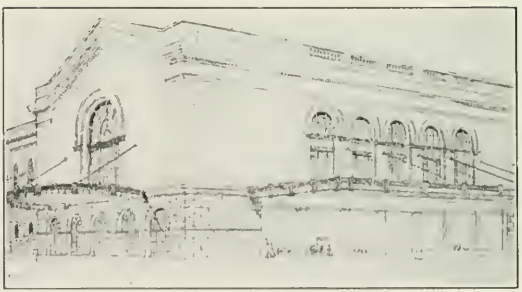
Two Houses on Broadway, San Francisco
Alfred Henry Jacobs, Architect

admit that we do not begin to have such store of creative plastic ability to draw from, it must be conceded that the French performance while always brilliant and astonishing, is often restless, dizzying and unbeautiful.

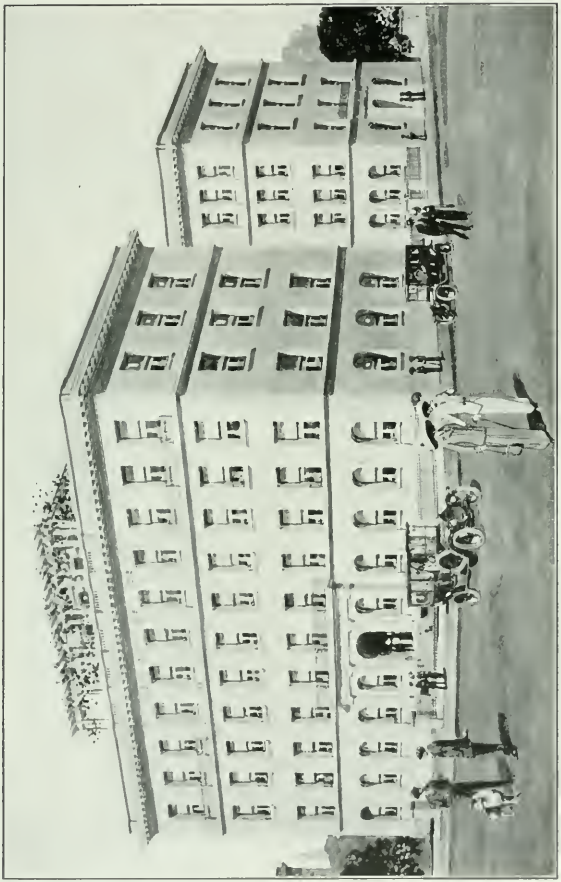
In Europe it must be remembered, one is within a day's journey of all the white man's architecture that ever was. But here in San Francisco, in Chicago, St. Louis, across thousands of miles of plains and prairie we have nothing as yet of great serious original architecture in its sublime moods. Therefore, the need to put into form, if only for a brief season—those divine creations of the elder races. In contrast, therefore, to the spirit animating a European Exposition, we should aim rather to show the admitted glories of the great historic styles, which our people but dimly know about, rather than to exploit architectural novelties and frivolities or to conceive an Exposition as merely an expression of transient gaiety—a thing of banners and bands and streamers and stucco.

In accordance with this peculiar educational function of an Exposition in this part of the World the Commission of Architects have acquitted themselves so far, with astonishing credit. Where one might have expected an attempt at something merely big and sensational one is overjoyed to find that far from striving to shine by excess the whole enterprise has been conducted with most excellent restraint. Nothing obtrudes or overwhelms. All is most excellent democracy of art. If any rivalry is apparent it is rather of the intensive kind. Within bounds of restraint and without undue assertiveness each architect has striven to excel in beauty, proportion and harmony. As this is the real test of good architecture it can be seen that the designs of the various courts, including the circumvallation that surrounds them all, is of a very high order indeed. It is presumptuous to dogmatize, I would rather say nothing than gush, but I cannot but feel that no Exposition held in this country gives so much promise of architectural perfection as this one of 1915.

The Jane K. Sather Memorial Tower, University of California
John Galen Howard, Architect



Proposed Southerly Addition to Ferry Building, San Francisco
L. B. Dutton, Architect



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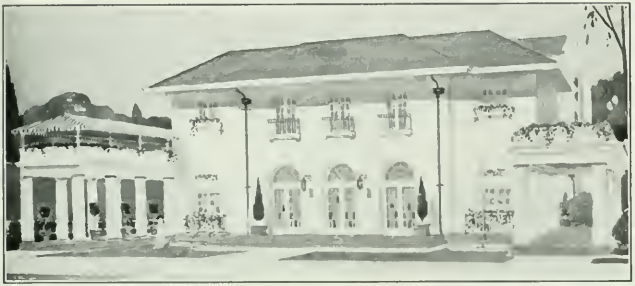
Woollett & Woollett, Architects

First Presbyterian Church, Livermore, California
Henry H. Meyers, Architect



Sketch for Club House, Berkeley *Coates & Trazer, Architects*

Upper Residence, Ross Valley
J. W. Dolliver, Architect

Taylor Residence, Piedmont *William Knowles, Architect*

I place first as a veritable gem the courts facing south designed by Mr. Kelham. As revealed in the plaster model or colored by the genius of Mr. Guerin these courts are beyond criticism in composition, scale, proportion, and a pervasive beauty of a most refined and subtle quality that it is a pleasure to look at, and look at again.

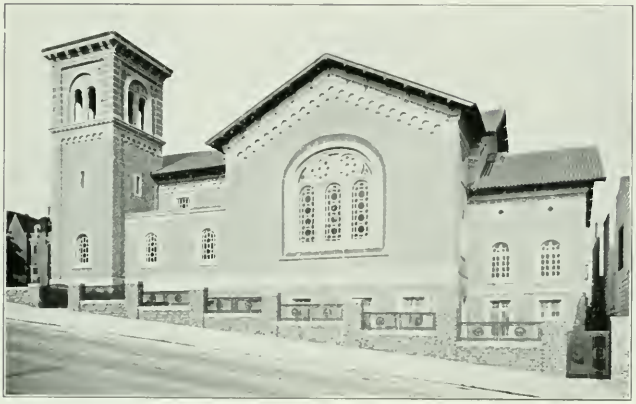
Next one cannot but feel confident and reassured about the Great Central Court of McKim, Mead & White. It is a scheme of great dignity and interest. The scale seems a little uncertain in spots, but doubtless the finished work will have these things corrected. The blending of the Oriental motives set upon good old Roman substructure is interesting and suggestive.

These courts elicit praise because they are so clearly defined, so architecturally expressed. From this viewpoint Mr. Mullgardt's quasi-Gothic Court and corner tower as suggested in a wonderful black chalk drawing is both beautiful and baffling. As a suggestive dream-picture it is, indeed, the most interesting line drawing in the exhibition. If it is carried out in reality in such a way as to realize the promise of this truly wonderful drawing, then surely this court will be the gem of the collection. Its appeal is irresistible. It calls up so many imaginings. It is both familiar and novel. Its realization will be watched with more interest than that of any other building.

A wise man has announced that "There can be any number of supremes." Mr. Maybeck's first exhibited sketch of the Art Building gave the impression of the most poetic conception to date in my mind of all the drawings on exhibit. The others seemed draftsmanship, this was a creation. Mr. Maybeck is a staunch believer in the French school, yet could anything be conceived less French in design, in conception, in rendering. Clarity, logic and gaiety are Gallic characteristics. This design is vaguely, sketchily and romantically drawn; the big octagon rotunda covers nothing and cannot be reached, except at the back; and the whole group is solid and sombre as a Roman Arch of Triumph. In these things it is surprisingly un-French. But the whole thing was a surprise. The most coveted building in the Exposition fell finally to one who least expected it. Mr. Maybeck is one of the most modest men in the profession. That he should have come out with so stunning, so characteristic a design and been entrusted with its realization is one of the most satisfying and agreeable incidents in the history of the Exposition plans. This is one of the few buildings of the Exposition as distinguished from courts and colonnades. It would repay rendering in a plaster model which doubtless in time we shall see. In this building the promise is so high that we shall all look to its adequate realization with sympathy and hope.

The Entrance Tower by Carrere & Hastings is frankly a disappointment. It is not a serious study. It is amorphous in design, monotonous in silhouette, freakish in scale, and nondescript in detail. At present it looks like a Siamese wedding cake. It may build up better than it looks. Let us hope so.

Not the least interesting feature of the "Golden City" is the circumvallation and its towers, arches and gateways designed by Mr. Faville. This is indeed a most important feature of the Exposition, tying it altogether in a simple band of restful wall surface punctured at various quite unmonotonous intervals with grilles, windows, niches and doors. Sometimes it gathers itself up into a fortress-like tower gate, or quiets down to a simple Arch of Triumph, or hollows itself into a great half dome, or breaks out into gorgeous screens of richly wrought panellings, canopies and open

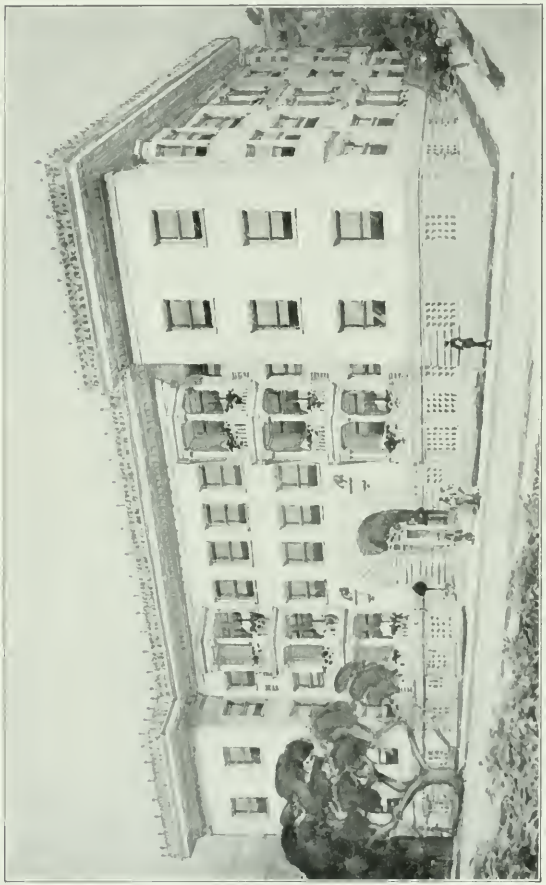


First Church of Christ, Scientist, San Francisco
Edgar A. Mathews, Architect

Interior, First Church of Christ, Scientist
Edgar A. Mathews, Architect

State Armory, Los Angeles California
J. W. Woollett, Architect

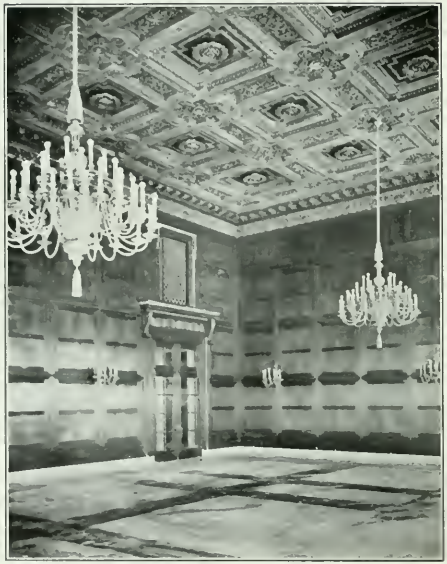
Residence of Irwin Bare, San Francisco
Fabre & Bearwald, Architects



The Euclid Apartments, Berkeley
John Galen Howard, Architect

Oakland Hotel
Bliss & Faville, Architects

Arcade of Court, Oakland Hotel



Cafe Oakland Hotel

Detail of Lounging Room, Oakland House

Entrance Masonic Temple, San Francisco
Bliss & Faville, Architects

Residence of Miss A. Head, Berkeley *W. H. Ratcliff, Jr., Architect*

arcades. It is done in Spanish renaissance in the main and for historical interest or detail and motif will form one of the most memorable features of the walled city of 1915.

The "Court of the Four Seasons" is beautifully named and charmingly rendered. Its utter simplicity is very promising. It may create more satisfying impressions than other courts we have been more sanguine about.

It is a significant thing that so little of the real French spirit has expressed itself in the scheme. The Horticultural Building is an example,

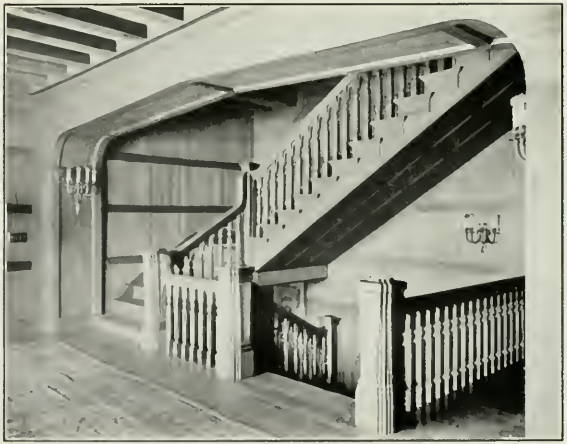
Interior of Salon, A. B. Spreckels Residence, San Francisco
Photograph by O. S. Sarsi

and glass and iron lend themselves with great felicity to Gallic genius. This soaring dome of crystal with its contrasting minarets of metal will form a fine foil to the solid and serene walls of the main group.

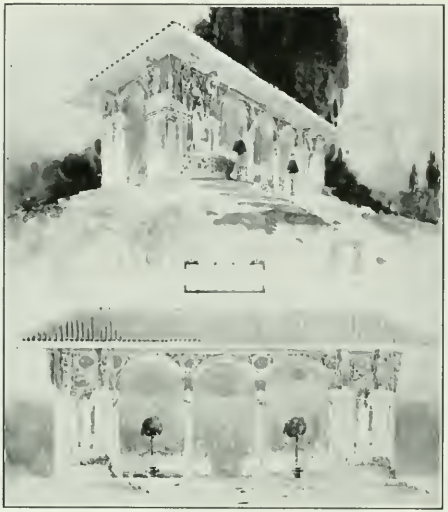
The Automobile Building and the Festival Hall also show the French touch, and in both cases quite logically enough.

It is to be hoped that the acoustics of the latter building will not be overlooked.

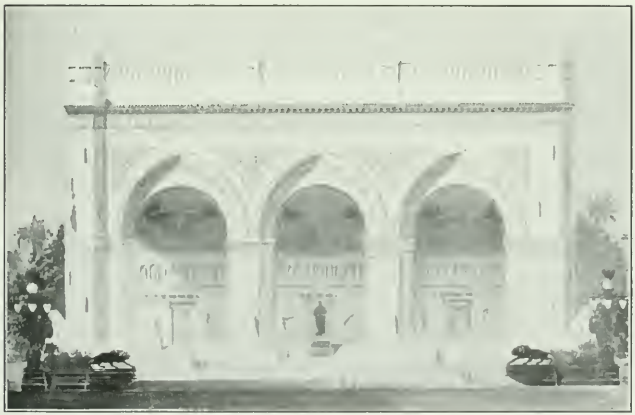
Residence of Geo. A. Newhall, Burlingame Lewis P. Hobart, Architect



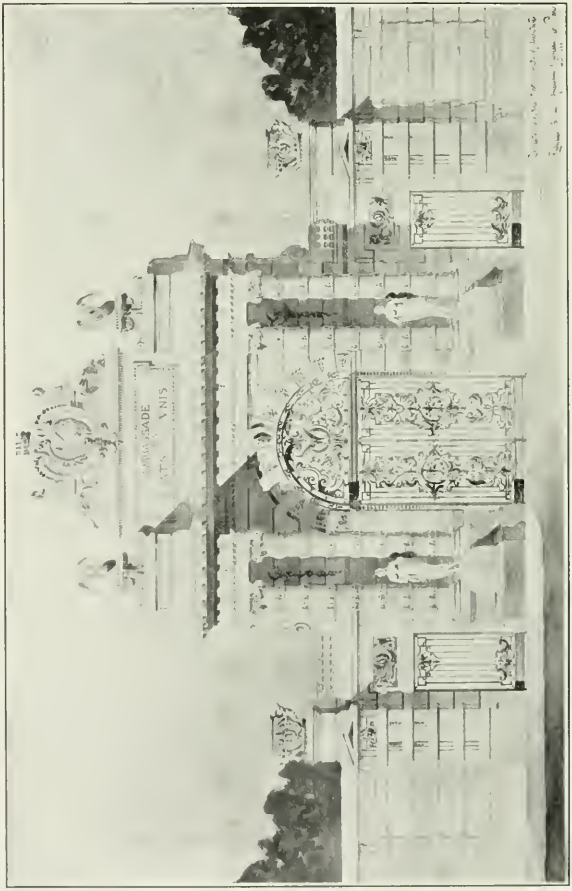
Stairway, Residence of Mrs. M. A. Huntington Herman Barth, Architect



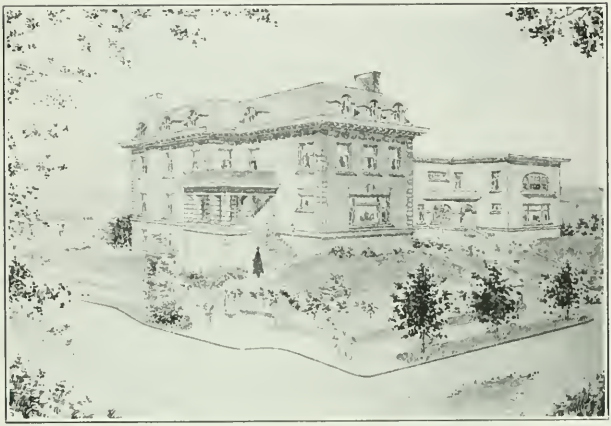
A Flower Market, S. L. Jory, University of California, Berkeley



Museum of Sculpture, First Mention, Massachusetts Institute of Technology
Elmer Jerome Krafft with J. F. Kraft, Boston, Architects and Engineers



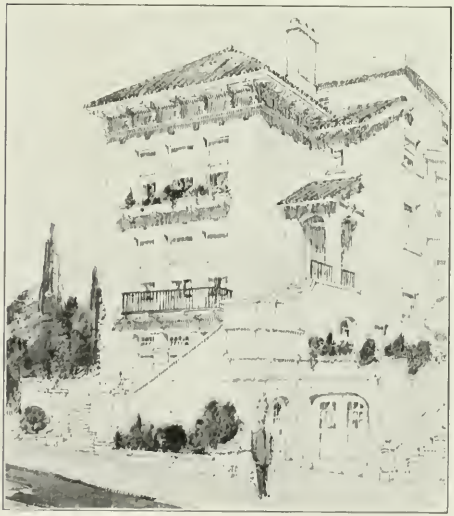
Entrance to an American Embassy, Paris. First Mention Boston Society of Architects' Competition.
Elmer Jerome Krafft, J. E. Krafft, & Sons, Architects and Engineers



Residence of Hd'n S. Newhauer, San Francisco
J. E. Krafft & Sons, Architects and Engineers

Residence of Ruth Merrill Hammond, San Francisco
J. E. Krafft & Sons, Architects and Engineers

Entrance to Residence *C. W. McCall, Architect*

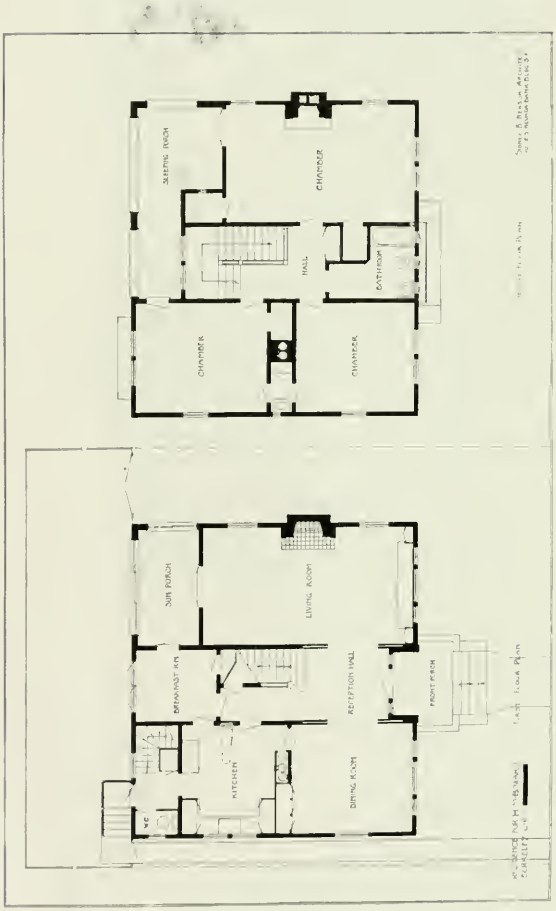


Residence Flats for E. L. Barcelles *Fabre & Bearvallet, Architects*

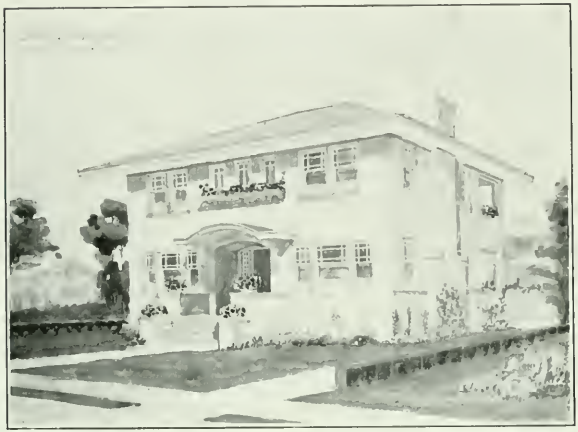
Lux School of Industrial Training, San Francisco
W. C. Hayes, Architect

The "Civic Center" plans celebrate an event of permanent importance not only to San Francisco but to the whole country, and the rest of the world. San Francisco is to be congratulated on the quick, clean business-like way she has got results in this most difficult venture that any city can embark on. Those who came in at the finish and caught the town in a festive mood with a great Exposition looming in the air, have little grasp of the long, long campaign that went before and prepared the ground for them. To them the task was easy and inevitable. The real hard work was done before by those who faced the inertia, the dead momentum of popular indifference, the conflict of personal ambitions and private interest and the long string of difficulties, like mountain chains that had to be laboriously crossed, that a way might be blazed for future use and final victory.

We have much to be thankful for in the assured "Civic Center." Its effect on the future one cannot even begin to predict. Perhaps it is a more important event than the Exposition, who knows?



First and Second Floor Plans, Residence for H. M. Howard, Berkeley
Sidney B. Newsom, Architect



Residence of H. M. Howard, Berkeley
Sidney B. Newsom, Architect

The H. M. Howard Two-Story House

THIS seven-room residence is now building in Berkeley, on the south side of Woolsey street between Claremont and College avenues, making a north frontage. The plans readily explain themselves while the perspective shows the exterior.

The wood work of the interior first floor is to be natural pine, the walls done in paper and the floors hardwood. Fireplaces are placed in the living room and the main bedroom. Book cases, box seats, a built-in sideboard and large glass sliding doors opening from the living and dining rooms to the entrance hall and from the living room to the sun porch, are some of the features.

The cabinet kitchen is fitted up with a stone composition sink and drains, mixing counters, cooling closet, cupboards, bins, sliding bread board, lockers, a concealed ironing board arranged for electric irons, etc.

The wood work of the second floor is done in white enamel, the walls in paper, and the floors finished and waxed in natural pine. In the bath-room is a combination shower and bath-tub set in an alcove. The exterior walls are done in white cement with a tinge of ochre, the roof in a dark red gravel, and the wood trimmings in a light gray. Sidney B. Newsom is the architect.

* * *

Not Dead But Sleeping

A San Francisco sidewalk concern that "didn't need to advertise" has now felt called upon to publicly announce that it "has not retired from business." Like Phoenix, they arise from the ashes of the obscurity which this non-progressive policy has cast them. A live concern is known by its activities and doesn't need a doctor's certificate of health.

American Institute of Architects

Official Proceedings of the San Francisco Chapter

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Fire Tests of Partitions for Buildings

THE first of a series of lectures under the auspices of the San Francisco Chapter, American Institute of Architects, was delivered by Mr. H. B. McMaster of Youngstown, Ohio, at the Palace hotel on the evening of April 3rd. Mr. McMasters gave an interesting lantern-slide talk on "Some of the Phases of Fire Proof Construction" with particular reference to the use of metal lath and plaster as a fire retardent, the speaker being a commissioner of the Associated Metal Lath Manufacturers, which is affiliated with the entire metal lath industry of the United States. The lecture was based upon data that was developed at fire tests conducted by V. D. Allen, State Building Inspector of Cleveland, Ohio. One hundred lantern slides were used in illustrating the talk.

In speaking of these tests Mr. McMaster said:

"I want to dwell particularly upon one great lesson that was brought to all who had anything to do with those tests. The superior fire-resisting value of cement mixtures was again well demonstrated but regardless of findings of this character, however valuable to the building trades, there was one thing impressed upon us through it all that should have the thoughtful consideration of every man in any way interested in building construction.

"Whatever of value may have been gotten from these tests can have official recognition only by the City of Cleveland as the tests were under the direction of the Cleveland Building Department. If similar investigations were desired in San Francisco, or any other city revising its building laws, the effort and expense would have to be duplicated.

"Some of the manufacturers may have gone to the expense of having their materials or devices tested by the Underwriters' Laboratories. The approval of this institution always has much weight, as it should, but it is manifestly wrong in principle that a private concern should fix the standards or constants that are used and enforced by city, state and national governments.

"I am led to believe that the remedy is on the way, as I understand The Bureau of Standards has in its budget for the coming year an item of $25,000 to carry on fire tests. A similar item was refused by the last Congress, but I am sure that anyone who has anything to do with the marketing of building materials and devices will agree with me that there is but one place where these standards can properly be fixed and that is by some Bureau of the Federal Government.

"When this 'National Testing Laboratory' becomes operative, it will be only a question of time when we shall have uniform standards for every city and state. It is not reasonable to expect that any manufacturer having confidence in his material or devices would do other than wish to have

the government determine its physical properties and give it official approval.

"There would be a tremendous saving of money by precluding the numberless duplications of effort and there would be no cause for the bitter contentions which have characterized legislation on building codes at some points in the country."

Following is a brief summary of the tests:

The panels were 10x8 ft., built into steel frames hinged so as to be swung against an opening in a furnace fired by oil. The fire test was for two hours, after which the panel was swung back and a stream of water was thrown on it for one minute from a hose connected to a city hydrant and having a 1⅛-in. nozzle. The tests were made under the direction of a committee appointed by V. D. Allen, Inspector of Buildings. The committee was composed of L. H. Miller, an engineer of the Bethlehem Steel Co.; Prof. Nelson, of the Case School of Applied Science, and Wm. S. Lougee, architect. The Division of Buildings was represented by A. W. Zesiger, Engineer of Construction, who has checked for us the accompanying abstract of the results.

The panels were allowed to set for two weeks before being tested. Their construction and the results of the tests are described below:

Panel No. 1—This was of No. 24 painted expanded metal lath stapled to 2x4-in. pine studs, 12 in. c. to c., plastered with a cement and lime plaster on ¾-in. grounds, about 5½-in. thick over all. It took 30 minutes to bring the temperature up to 1700° F., and for the remaining 1½ hours it ranged between 1700° and 2000°, the maximum reached being 1912°. At the end of the two hours, the door was thrown back and water from a city hydrant was directed against the hot panel through a 1⅛-in. nozzle within one minute after the door was opened. After cooling, the metal lath and plaster was torn down to see what had been the effect on the wood studs and outside of wall. What was left of the studding was charcoal, but the outside of the wall was intact and in a condition to resist more fire.

Panel No. 2—This was of white pine lath on wood studding, 16 in. c. to c., plastered with a patent gypsum plaster on ¾-in. grounds. The fire reached a maximum temperature of 1865°, but in less than an hour all but the outside shell of plaster was destroyed and that was gradually cracking and opening up; this allowed the cold air to enter the chamber, with the result that it held together long enough to give it the two hours' fire. After the water had been thrown on it, there was practically nothing left of the panel.

Panel No. 3—This had painted No. 24 expanded metal lath wired to ¾-in. steel channel studs spaced 12 in c. to c., plastered on both sides with lime and cement mixture, making a solid wall 2 in. thick. The grounds were ¾ in. thick on the lath side and ½ in. on the other side. On this partition the maximum temperature was 1929°. When water was thrown upon it, with the exception of the washing off of a thin layer of the plaster (that had recalcined under the intense heat) the partition had the appearance of being able to go through another such test.

Panel No. 4—This was a stucco wall such as would be built with metal lath and cement plaster for the outside wall of a house. The metal lath was fastened direct to the 2x4-in. pine studding, then plastered and backplastered between the studs, giving a thickness of 1½ in. This side, corresponding to the outside of a house, was placed next to the fire, as it was desired to learn how far this construction might prevent the spread of a

conflagration through a residential district. On the outer side of the studding, which would correspond to the inner side of the wall, No. 24 metal lath was fastened and plastered the same as panel No. 1.

The mixture of the cement plaster was particularly designed to prevent hair cracks and other imperfections to which stucco walls under alternating weather conditions are subject when not properly built. It seemed to stand the abuse about as well as, if not better than, panel No. 1. The furnace was fired the full two hours, the highest temperature reached being 1943 , and water was then poured upon it. After the test the fire side of panel (representing the exterior of a house) was intact; on tearing off this side after cooling, the wood studding was found in much better condition than in panel No. 1.

Panel No. 5—This was made by wiring metal lath on both sides of a studding $2^1/_2$ in. over all, built by fastening two $^3/_4$-in. steel channels together. The cement plaster was applied to both sides alike, as in panel No. 1, with $^3/_4$-in. grounds, thus making a 4-in. hollow metal lath partition. The temperature reached 1976°. The metal lath was slightly exposed on the inside of the wall, but it was thought the test might have been repeated before the partition would be destroyed, as the outside of the wall had received no damage and the fire side was good for service to protect the outside from heat.

Panel No. 6—This was $^3/_8$-in. plaster board nailed to 2x4-in. pine studding. The plaster was put on $^3/_4$-in. grounds in three coats. This panel had a total fire test of 74 min. at a maximum tempreature of 1562°. Then water was allowed to flow on it at low pressure to quench the fire in the panel, after which the full stream was turned on for half a minute, with the result that practically nothing was left of the panel.

Minutes of Chapter Meeting Held March 20th.

The regular monthly meeting of the San Francisco Chapter, American Institute of Architects, was held Thursday evening, March 20th.

Members present were: George B. McDougall, President; Edgar A. Mathews, Vice-President; Sylvain Schnaittacher, Secretary and Treasurer; W. B. Faville, William Mooser, Trustees; G. A. Applegarth, John Bakewell, Wm. Binder, Wm. H. Crim, A. R. Denke, Edw. G. Garden, Ralph W. Hart, A. G. Headman, Chas. E. Hodges, B. J. Joseph, J. R. Miller, Wm. G. Mitchell, Matthew O'Brien, Chas. Paff, Wm. O. Raiguil, T. P. Ross, Albert Schroepfer, Henry A. Schulze, E. J. Vogel, F. D. Voorhies, Chas. P. Weeks, Carl Werner, Wm. L. Wollett, G. A. Wright.

The name of Mr. John Galen Howard having appeared in the minutes of the regular meeting of February 20, 1913, as being present when such was not the case, the minutes were adopted with this correction.

Mr. Mooser for this Committee, reported that the competition for the Sacramento School House had resulted as follows: Messrs. Shea & Lofquist, first prize; Mr. J. J. Donovan, second price; Mr. Walter H. Ratcliff, third prize.

Mr. Headman, Chairman, stated that arrangements were being made for the Convention of the League in Portland in June, and that the current exhibition of the Architectural Club was the best that had ever been held and that great credit was due Mr. Faville as Chairman of the Exhibition Committee.

Mr. Schulze, Chairman, reported there was no ground for the assertion made by the Home Industry League that the specifications for the New City Hall were to the disadvantage of local materials; that the specifications

had not been completed and that as far as he was aware, the drawings contained no impediment to the use of local materials and he felt sure that the specifications would be drawn in the same spirit. It was hoped by the architects that California granite would be used.

Mr. Chas. P. Weeks, Chairman, stated that the Committee had been in correspondence relative to securing an address from Mr. F. H. Wentworth on Fire Protection. It was also suggested that a talk on Fireproof Partitions be given, under the auspices of the Chapter.

Mr. E. A. Mathews, Chairman, reported that the Committee had been greatly encouraged by a visit to Sacramento in conjunction with a committee from the Southern California Chapter, and suggested that any members having influence or acquaintances in the Legislature, use this influence for the purpose of education on the proposed measures.

Mr. Mathews also stated that bills were under consideration by the Legislature carrying appropriations totaling ten million dollars for new State buildings.

The following communications were read, ordered received, and placed on file:

From Hon. James Rolph, Jr., Mayor of San Francisco, regarding the Bureau of Architecture, etc.; from the City Beautiful Convention requesting the Chapter's co-operation in the matter of window boxes, etc.; from the American Federation of Arts, preliminary notice of the convention to be held in May, also communication enclosing draft of amendments to its constitution; from the National Conference on City Planning, letter and announcement of the Fifth National Conference to be held at Chicago in May; from Walter Cook, President A. I. A., in regard to the National Conference on City Planning; from Glenn Brown, Secretary A. I. A., in regard to increasing the membership of the Institute; from H. E. Nye, President S. F. Architectural Club, concerning the Convention of the Architectural League of Pacific Coast; and copy of Ordinance from the Electrical Contractors Association.

The report of the Board of Directors of the Chapter relating to the charges against Messrs. Howard, Meyer and John Reid, Jr., was read.

After discussion the report of the Board of Directors was adopted.

On motion duly made, seconded and carried, it was ordered that the trial of Messrs. Howard, Meyer and John Reid, Jr., be conducted in open meeting of the Chapter to be held at the call of the Chair, and at a time not earlier than thirty days from the date of notification; that the meeting be in the daytime and that counsel to represent the Chapter be selected by the Board of Directors.

The Chair reported the invitation of the General Contractors Association to the members of the Chapter to make generous use of their new quarters.

The Secretary was directed to make inquiry of the Boston Chapter as to the procedure to be followed in recommending candidates for Institute membership.

The Chair was empowered to call a meeting of the Chapter in April at the time of the meeting of the State Board of Architecture or at such time as the members of the Southern California Chapter would be in San Francisco; and that in addition to entertaining the visitors, to transact such business as might properly come before the meeting.

* * *

Foresight is very wise, but foresorrow is very foolish; and castles are at any rate better than dungeons in the air.—Sir John Lubbock.

With the Contractors

Second Year of the San Francisco General Contractors' Association

THE following report of retiring president, Chas. A. Day, was recently made before the annual meeting of stockholders of the General Contractors Association of San Francisco. During the two years of its existence this Association has grown to be an important factor in the life of San Francisco. Its progressive management has done much to improve conditions existing in the building industry, and we have here reproduced the report in full, believing our readers will be interested in the growth of an organization which has become so closely identified with the local building industry:

In presenting my second annual report to the stockholders of the General Contractors Association, I wish to congratulate the Association upon the remarkable progress made during the short period of its existence.

In spite of the many predictions of failure made by those who have witnessed the numerous abortive attempts to organize the contractors of this city, our Association has prospered beyond the dreams of the most optimistic of our members, and is now established on the firm foundation of financial and numerical strength.

The steady and continuous growth of our membership and the very satisfactory increase in our resources is positive evidence that we have made no mistakes in our scheme of organization. If maintained and conducted along the present lines, this Association is bound to be an important factor in the future growth of San Francisco.

Conclusive evidence of the interest shown in the affairs of the Association by stockholders is the large attendance at our bi-weekly meetings. Our records show from 40 to 50 per cent of our entire membership present at every meeting. This is a record to be proud of and one that I hope will be not only equalled but excelled during the coming year. Nothing is more discouraging to the officers of an organization than a lack of interest in its affairs on the part of the members. On the contrary, a lively interest manifested by the membership will stimulate the officers to greater efforts in the upbuilding of the Association.

A consistent effort has been made during the past year to secure the letting of work under the general contract plan. That our efforts have been more than fairly successful is shown by the very apparent increase in the number of jobs let as general contracts, a majority of them to our own members. Our records show that considerable more than 50 per cent of the entire work of the city let under this plan has gone to our stockholders in addition to many large contracts let outside of San Francisco.

Labor conditions have been fairly satisfactory, strikes and other disturbances being conspicuous by their absence. I feel safe in saying that this condition has been brought about largely through the influence of the Building Trades Employers Association and our own organization. A successful organization of employers and one that will stick has a moral effect on the labor agitator and the walking delegate that is wonderful to contemplate.

In all fairness I wish to state that the President and the Officials of the Building Trades Council have shown a spirit of conciliation in the discussion and settlement of all matters which have been at issue between the two organizations. Their attitude is to be highly commended as it has made easy the settlement of several small affairs which might readily have developed into large ones.

The time to settle these things is before the trouble has commenced and before damage has been wrought to the interests of either party to the controversy. The

old method of calling the men off of the job, and tying it up awaiting the adjustment of some matter over which the contractor may have no control, will not be tolerated by this Association.

Our entire assets, and the backing of the entire membership are pledged in the support of any of our stockholders who are not given a square deal in these matters.

The recent demand of the laborers of Alameda County for an increase in wages of from $2.50 to $3.00 per day of eight hours, should arouse this Association to take an immediate and decided stand against any further increase in the already high standard of wages paid in the building industries of San Francisco and vicinity. Vigorous objection should be made to the vicious practice of declaring for an increase of wages without the formality of consulting as to the advisability of a raise with the man who pays the bills.

It is eminently unfair to force the contractor to pay for something he could not possibly have provided for. A raise of wages during the progress of a job means an actual loss to him that cannot be made up in any way.

Our members are urged to refer to the Association for adjustment any and all questions arising from labor difficulties, as these matters can be handled to much better advantage by the organization than by the individual members. A number of these vexatious questions have been handled by your Secretary in an intelligent and expeditious manner, and in every case a settlement has been arrived at which was satisfactory to all parties concerned.

The very inadequate quarters which the Association has been forced to occupy have been a handicap which any organization would stagger under. It is really a wonder that we have been able to induce anyone to join us when we had nothing better to offer them. This will soon be a thing of the past, however, as our new quarters are ready to receive the furniture and we will soon be housed in the finest rooms which were ever enjoyed by the contractors in this or in any other city.

The furnishings which have been provided by your committee, owing to the generosity of the appropriation allowed them, are entirely in keeping with the beautiful rooms, and the combination will be one which I am afraid will tempt our members to spend time in the headquarters which should be spent outside earning an honest dollar.

Too much importance cannot be attached to the dignity and prestige which will be gained by the Association in its removal into its magnificent new building. It will give it a standing in the community which it could never attain in less pretentious quarters.

The thanks of the entire membership should be extended to the committee, whose patience, perseverance and level headedness made it possible for the Association to secure such a valuable lease.

The material progress of the Association for the past year has been such as to entitle us to the heartiest congratulations. The increase in our list of stockholders and in the Associate-membership, as shown by our Secretary's report, is highly gratifying, and the accumulation of $21,000 in cash assets, a gain of nearly $10,000 in the last twelve months, shows the Association to be on a firm and substantial financial basis.

To our genial Secretary, I wish to extend my thanks for the cheerful and willing service he has given during the time I have been honored by being your President. He is a worker, and the marvelous success of this Association is due in no small measure to his tireless efforts. The Association is fortunate in having in its service so efficient an employee.

Our bookkeeper, and our doorkeeper and his young assistant show an interest in their work which is very pleasing by contrast with the indifference so often met with among employees.

To the stockholders, I wish to express my appreciation of their attendance at the meetings, their cheerfulness at accepting the duties of committee work, and their uniform courtesy and consideration. I do not remember ever presiding over an organization where there was more harmony and good-fellowship displayed than we have had here at our little meetings every two weeks.

To my fellow Directors, I wish to say that it has been a real pleasure to serve with them. Cheerful and ever ready to assume their share of the work, they have made my duties much lighter than they might otherwise have been.

Gentlemen, you have been very fortunate in your selection of men to serve on your Board of Directors. Without men of such sterling qualifications and standing in the community, the wonderful success of this Association would not have been possible.

My advice to you is to keep them on the job as long as they will stay there.

Pulse of a Skyscraper

BY day or night a modern city is never wholly at rest. A hundred disturbing factors are constantly setting up curious vibrations which travel in every direction. The tracing out of these vibrations and their accurate measurement is a new problem among builders which has a peculiar interest for the layman as well. This problem of feeling the pulse of buildings is not limited to great cities, but often arises in comparatively small towns throughout the country. Let a train rush past the foundations of a high building, or even a low one, or a powerful windstorm beat against its walls, and the entire structure may vibrate like a giant tuning fork. Incidentally, the problem is so well understood that accidents from excessive vibration are practically unheard of. The cradle may rock, but it never falls.

The measurement of the pulse-like vibrations is made much the same as that of an earthquake, and almost as accurately. The marvelously delicate instruments which are depended upon for these records trace curious pulsing lines, which show at a glance just how wide an arc the building swings through, and how regular is the recurrence of the movement. These readings are accepted in court as absolutely conclusive, and it is not uncommon for damage suits involving immense sums of money to be decided by these delicate tracings.

Public opinion is all wrong, or nearly so, as to the amplitude of the vibrations of buildings both large and small. Everyone has felt such vibrations, but one's sensations are apt to be very misleading. It is a surprise to many that the most violent vibrations are not felt in the extremely high buildings, as is commonly supposed, but in the comparatively low office buildings, and as a rule those of solid construction. A vibration of three-sixteenths of an inch is extremely violent, for a movement of one-hundredth of an inch is readily noticeable. As the records show, there is a peculiar method of rhythm in these movements, the building swaying back and forth through a given arc with the regularity of a pendulum.

* * *

How to Attach Plaster to Concrete

The Aberthaw Construction Co., Boston, Mass., recommend the following method of attaching plaster to concrete. "Make the concrete as porous as possible by omitting sand from the mix and by not spading the concrete next to the forms. Where plaster is required underneath a floor or roof, if the forms are sprinkled with ½-inch stone before the concrete is placed, a rough surface will be obtained to which plaster will key nicely.

To attach Portland cement plaster to smooth concrete, hack the surface with a point, brush the surface thoroughly to get the dust out, wash it, and in every case make sure that the under concrete is thoroughly wet before the plaster is applied. Otherwise the water will be soaked out of the plaster and the plaster will not adhere. Wash the surface with grout just ahead of the plaster and make sure that the plaster is applied before the grout has time to set.

It is the experience of the Aberthaw Construction Co. that lime plaster is very unsatisfactory for placing on concrete surfaces. The only way they have been sure of a satisfactory result is to use plaster which is principally composed of plaster of Paris.

Steel in Building Work

An Interesting Paper on the Use of Structural Steel, Giving Maximum Results at Minimum Cost

By J. R. GRANT, As. M. Can. So. C. E.*

AN ENGINEER who was to present a paper on "Steel in Public Buildings Construction," before a society in Philadelphia, was told when he arrived at the society rooms that some of the members expected him to speak on "Graft in Connection with Public Buildings."

In introducing his subject he mentioned this mistake, and made some of those present indignant by saying that he could tell them nothing about that kind of steel.

The commercial term "steel" includes widely different materials, as every demand for new properties has been met by a new product, and these have been produced in such rapid succession that the last few years in the history of metallurgy read like a fairy tale.

Many of these products as the alloy steels for automobiles, are of greatest interest, but none have been of greater value to mankind than structural steel. As adopted by the best authorities, structural steel for buildings is a low carbon product. This is not injured by the punching and shearing required for fabrication as a high carbon steel.

Only two things are necessary in the design of steel structures. The first is to properly design the steel for the work it has to do; the second is to properly design the steel so that the necessary work can be done in fabrication and erection, and that at a minimum cost.

The first unit to be considered in a design, is the beam. Where the load is a uniform one, the handbooks published by the different steel companies give the size required. These tables assume that the top flange of beams, and that both the top and bottom flanges of channels, are supported laterally. If this is not the case the values should be reduced as for long and slender columns. Care should be taken to select a beam of sufficient depth to avoid excessive deflection. If the span is unusually short, the beam may be weak, due to excessive horizontal shear. This is more apt to be the case with the light wide-flanged beams placed on the market the last few years, than the old standard sections. If the beam rests on a bracket or wall plate, a section with a thicker web may be required to prevent the web buckling over the support.

When the span is short, a beam is apt to receive its greatest stress from the concentrated loads, such as safes, usually found in an office building. Where square panels are used, one quarter of the load of a panel is carried to each beam, but it is not applied uniformly, but increases from the support to the center. If considered as a uniform load, the beam would be 35 per cent. light.

In rectangular panels with intermediate beams, it is usually economy to use three beams per panel, as this reduces the size of the girders.

For rolled beams, the shop work is usually a very small item. Sometimes the cost is unnecessarily increased by using more than one size of holes in the same beam, which means that the beam must be handled twice.

Although it is a departure from my subject, I wish to call attention to faults often found in timber designs. Douglas fir is strong in resisting

*Paper read before the Victoria Branch, Canadian Society of Engineers by J. R. Grant, Associate Member American Society of Civil Engineers, Member American Society for Testing Materials, associated with Cleveright, Matheson & Co., Consulting Engineers, Rogers Bldg., Vancouver.

tensile and compressive stresses applied with the grain, but is weak in its resistance to crushing across the grain, and to shearing with the grain. Timber beams although of sufficient strength to resist the bending stresses, are often dangerously weak, due to the excessive horizontal shear. They should not be of greater depth than about one-tenth of the span unless this horizontal shear has been considered. Beams should have sufficient bearing area to prevent crushing the fibers. I have seen columns on which beams rested directly cut nearly two inches into the beam before the load was reduced to a point of safety. Using a fir corbel with the grain horizontal, does not help, as the crushing is simply transferred to the bottom of the corbel.

Timber trusses are often very weak on account of the difficulty of transferring the stresses from the diagonals to the chords. Bolts bearing on the side grain of timber are of very little value as they soon crush into the fiber of the wood.

Built girders should be used instead of the heavier sections of I beams. Part of the strength of steel shapes depends on the work done on the material in rolling. With angles and plates this work is uniform throughout the whole section, but with beams the web is practically the only part of the section on which work is really done. The angle is produced largely by crowding the metal in the flange grooves of the rolls. This is only partly overcome by the new Grey roll, which does some work on top and bottom of the beam.

Tests made of pieces cut from the web and flange of the same beam show that the metal of the web is considerably stronger than that of the flange. Internal stresses set up in the beam while cooling, due to the different thickness of metal in web and flange, also tend to reduce the theoretical strength of the beam. This is particularly the case with large and heavy beam.

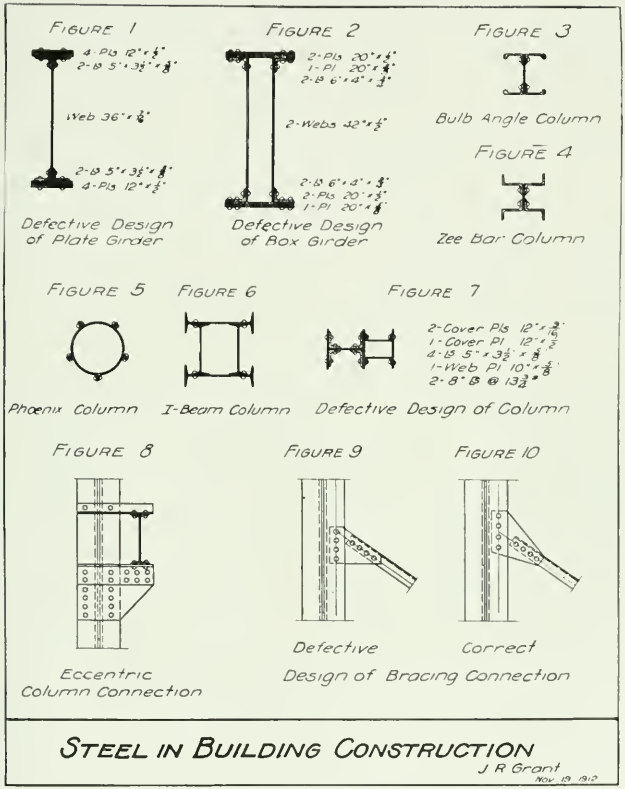
The built Girder being composed of plates and angles is a more reliable product.

It is necessary in considering the design of a girder to have the different parts so proportioned that they will act as one piece. To accomplish this it is necessary to have a sufficient number of rivets connecting the web and flange angles to properly transfer the increment of flange stress from the material forming the flanges to the web. It is not sufficient to develop the full flange area between the end and center of the Girder, as the amount of stress transferred is not uniform throughout this distance, for even with a uniformly loaded girder seventy-four per cent. of the flange area is required before reaching the quarter points.

A few years ago I had to revise a design for a building having some girders of 40 ft. span, carrying a uniform load of about sixty-eight hundred pounds per foot of span. They consisted of the section shown in figure No. 1. Having web 36 in. x 7-16 in. and I.S 5 x 3½ x 5-8 in. with four cover plates 12 in. x ½ in. top and bottom.

The flanges were sufficient to carry all the bending stresses, and the web was heavier than was required for the shearing stresses, but it was not possible to get a sufficient number of rivets through the vertical legs of the angles, and the web to develop the proportion of flange required in the first six to ten feet of the girder.

The trouble was overcome by using 14 in. cover plates and 16 x 6 in. Ls. allowing two rows of rivets through the vertical leg. The increase in the weight of the girders was less than one per cent.



A few years ago I had to revise a design, made by a firm of engineers from the United States, of a steel frame for a building in Canada. The change in column spacing above the ground floor tier in the front of the building necessitated large girders at the second floor. These girders were the best example of faulty design I have ever seen. Figure No. 2 shows a section at the point of maximum moment. The columns supported by and supporting these girders were built H sections with the webs parallel to the girder webs. The maximum width of cover plates on the columns were 14 inches, which brought the stiffeners used on the girder to transfer the load to the webs, mainly outside the load they were sup-

posed to carry. At one end, the girders were to frame into the columns, but with the sections used it was impossible to get a satisfactory or efficient connection.

Although the girders had a span of about 30 ft. the point of maximum moment was only 7 feet from one support, on account of the 4 in. leg of the 6 x 4 in. L being vertical it was only possible to use sufficient rivets through the angles and the webs to develop more than 2-3 of the flange area. Neither was it possible to develop the cover plates in the space allowed.

One web and one pair of angles of these girders were made continuous over the four points of support, the eccentricity thus introduced gave excessive stresses in one half of the girders and also in the center supporting columns.

I could not get the man who designed this work to give any good reason why he had used a box girder in this place, and I am certain no one else could. Every condition called for a girder with a single web. It meant a saving in material of over 1,000 each, 30% less work in fabrication, and efficient details, and connections. Of course, it was necessary to use flange angles with 6 in. vertical legs in order to have sufficient rivets to develop the flange.

In designing plate girders, it is not always sufficient to have enough area in the web to take care of the shearing stresses. This is apt to give too thin a web, particularly for long deep girders. The web should be thick enough to give the necessary bearing area for the flange rivets, and for good design it should not be less than 1 160 the depth. Sometimes it is economy to use a web of greater thickness, and so avoid the need of stiffening, which reduces the work required to fabricate, but usually increases the weight. When it is necessary to splice the web of a girder, wide plates should be riveted on each side, and enough rivets used to develop the strength of the plate in bending.

The top flange of a girder should be supported latterly to prevent the tendency to buckle which gives an increased stress to certain portions of the material. It is sometimes economy to use large angles and no cover plates as the saving in cost of fabrication may more than offset the extra material required.

Wide plates are not always true to width, or the edges perfectly straight. This sometimes means expensive clipping of the webs of plate girders. Where the depth back to back of flange angles has not been made greater than the width of the web plate, it is best to allow from one quarter to one half inch in this distance.

Holes of different size in the same piece of material always means increased cost, and the larger the piece, the greater this increase will be. I know of the steel from a building that was designed by an engineer who was unacquainted with the methods of handling material in the shops. In some large box girders he had called for open holes through the webs for tying in proofing to be 5-8 in. The rivets were all 3-4 in., requiring 13-16 in. holes. In estimating on this work the Company that secured the contract added 5c per 100 lbs. for the increased cost of handling due to these holes being of different sizes, which amounted to about eight hundred dollars. Before proceeding with the work, the Contractor's engineer asked permission to make these holes all 13 16 in. As it did not in any way influence the strength, the permission was readily granted, but the owner did not get the eight hundred dollars.

The weakest link in modern high building construction, is the column. In beams and girders the factor of uncertainty usually increases the factor of safety. The continuous action at supports and the arch action tend to reduce the stresses in the floor members. These actions in the floor members only make conditions worse, for the column, by changing the distribution of load between the columns and introducing a certain amount of bending.

The greatest source of weakness in columns is the eccentric applications of the loads. This should always be considered and provided for, but it is not always done even in steel designs, while with re-inforced concrete it is usually neglected.

One man who had designed considerable re-inforced concrete work told me that he considered there were no eccentric stresses in re-inforced concrete columns, and to prove his statement gave the example of one of a row of columns being destroyed by a derailed car, and the upper portion of the column hanging suspended from the roof until wooden supports were put in place. Of course, "Like the flowers that bloom in the spring," it has nothing to do with the case. Any column on which the loads are not symmetrically applied has to withstand the bending stresses due to this eccentricity.

For very high buildings, or where the loads are very great, the box column, composed of two channels and two or more cover plates, or four angles and four or more cover plates, is the most economical section, for most buildings up to twelve or fourteen stories the H section composed of plates and angles is the best to adopt. The rolled H section is sometimes used, but although sometimes cheaper, the material is not as good as in the built member. Sometimes in H columns bulb angles are used as shown in Figure 3, but unless the quantity is unusually large the saving in material does not make up for the increased cost per pound.

For some years the Zee Bar column as shown in Figure 4, was much used, but although an efficient section, the cost of fabrication is high on account of the shop not being able to shear a Zee Bar in one operation as they can an angle.

The connections for beams and girders are also more expensive than with the H column, so that of late years it has had a very small place in building construction.

A column section which was very popular for both bridges and buildings from twenty to thirty years ago, was the Phoenix column, shown in Figure 5. It was an efficient section, but it was impossible to get good connections for the floor members, and for bracing at a reasonable cost. Being the product of only one rolling mill, the lack of competition in the price limited its use, so that today it is practically not on the market.

Other columns of special sections have been used to a small extent, but the tendency has been to eliminate all but the standard sections and simple forms. This has been clearly due to the reduction in the price of steel, and the increase in the cost of the labor used in fabrication. The standard shapes, particularly the plates and angles, can be obtained with less delay from the rolling mills, and time of delivery is often a most important factor in building construction.

The use of standard shapes does not necessarily mean same column design. Figure 7 shows a column designed for the first tier of a twelve story building. The H portion of the column continued up to the second tier,

and at the second floor a large box Girder rested on the channel portion of the column. The width of the box girder was 20 inches which brought the stiffener angles of the Girder outside the metal in the column section. The center of gravity of the loads came about three inches from the center of gravity of the column.

When the designer was told that this introduced a high stress in the column due to bending, he said the stiffness of the girder would take care of that, entirely neglecting the fact that the column was there to carry the girder, not the girder the column.

The bending of the girder due to its load tended to bend the column in the same direction as the eccentricity of the load in the column itself, so that the stresses in both the girder and the column were increased.

The main objection to sections of this description is the increase in the cost due to the extra labor required to punch the material and rivet up the section.

The cost of the cast iron base required to distribute the column load over the masonry footing is also unnecessarily high.

The connections of the floor beams and girders to the columns should receive careful consideration, as the stiffness of the building, if less than about fifteen stories, usually depends mainly upon these connections, many building specifications call for the connection between beams and columns being made by means of angles riveted on each side of the web of the beam in the shop, and then field riveted to the column. This is the method always adopted when one beam frames into another, and for this case the connection angles have been standardized so that the shop cost is small, for all cases it is the lightest efficient connection for the beam.

When the beam frames into a column it is not often possible to see the standard connection angles, on account of the spacing of the rivet holes in the outstanding legs of the angles not being the same as required to fit the section of the column. As the column sections change for different tiers, these angles would change, making beams which would otherwise be alike, different. And the way to get cheap steel work is to make not only the section, but also the details so as to allow as great a duplication as possible.

The column bracket has been produced to give economy in spite of using a greater weight of material. It gives a considerable reduction in the cost of erection as it greatly reduces the number of field rivets and erection bolts required. It reduces the amount of shop work required on the beams and allows for greater duplication.

Column brackets for the smaller beams consist of a single angle riveted to the face of the column, but for the larger beams one or two stiffener angles are fitted to the under side of the seat angle, with the outstanding legs under the wet of the beam.

For all beams resting on column brackets, top angles must be provided tying the top flange into the column. As these top angles are usually shipped loose or only bolted to the column they are sometimes misplaced or lost, the inspector should see that they are replaced and riveted before he passes the work, as they are very necessary for the stiffness of the building.

When the center line of the beam does not coincide with the axis of the column the eccentric connection required should be carefully figured. Figure 8 shows a typical bracket for a spandrel beam placed 12 inches off the center line of the column.

If the load on this bracket was centrally applied, the bracket would be good for sixty-three thousand pounds but with twelve inches eccentricity it is only good for twenty-one thousand pounds. Or only 33⅓ of the value of the rivets being required for the vertical component or the direct load, the balance resisting the torsional component due to the eccentricity. These connections should all be figured from the Polar moment of Inertia of the Rivet Group. This connection is for a beam not over 12 inches deep. For a large beam stiffener angles would have to be used under the beam.

Sometimes these eccentric connections are left for the company furnishing the steel to design. This should not be, for often the detail is determined by nothing but a guess, and as the guess is usually made by an experienced draftsman, the result is apt to be a weak spot in the frame work.

* * *

The Professional Advisor—When Not to Employ Him

By WILLIAM DRAPER BRINKLE

Mr. William O. Ludlow, in a recent communication to the American Architect, argues against permitting an owner to secure sketches from different architects, even though these sketches be paid for. Not so long since, a certain gentleman wished to remodel in a picturesque way an old mill that stood on his country estate. The work amounted to perhaps three or four thousand dollars. Several architects were asked to submit sketches, myself among the number, and when each of us presented our bill for preliminary sketches, we were promptly paid. Now it would have been utterly absurd to have put the whole mountainous machinery of programme, professional advisor, etc., etc., into operation to grind out this little mouse of a $50 sketch, wouldn't it? Besides, I am utterly unable to see wherein the profession was damaged by what I and the other architects did. Let us not forget that the architect is riune; he is artist, professional man and business man. No code of ethics can possibly stand the pressure of public opinion unless it fits equally well any artist, any professional man, and any business man. The architect is in the highest sense, the servant of the people. His duty,—like the duty of every man, whether doctor or ditch-digger,—is primarily to the world at large; and after that, to his own particular profession. We realize how utterly indefensible is the attitude of the master-plumbers when they force upon the public the ruling of their Baltimore Convention,—in the matter of refusing to sell plumbing fixtures, unless they also have the privilege of installing them. This particular case is of course selfishness run rampant; but frankly, will not we be practically in the same category, if we make a fetich of our programme and professional advisor? In theory, all this is for the protection of the public; but when we come right "down to brass tacks," isn't it, after all, intended primarily for our own protection? Have we any right to say to the public, in effect, "We'll only play the game according to our own rules, and we do not propose to consult you or anyone else when we make those rules?"

This isn't an argument for doing away with the ethical code and the competition code, mind you, it is only an argument for flexibility and modern progressivism as against rigidity and conservatism.

Competitions*

BY THOMAS CRANE YOUNG.

THE American Institute of Architects has, through its regulation of competitions by means of its "Circular of Advice" and "Code," performed a useful service in supplying a definite set of rules under which such contests must be held, thus bringing the custom truly within the sphere of legitimate sport as in any other regulated contest of skill and chance.

Proper professional dignity, however, does not seem compatible with this method of deciding the important architectural questions involved in a competition any more than would be the case were similar methods adopted in the determination of legal or scientific procedure, or in the selection of candidates for professional employment. Nor has the regulated competition relieved the profession at large of the ruinous tax and economic waste involved in the unremunerated preparation of expensive competition drawings.

The following is suggested as a substitute for competitions intended to correct these evils. It is based on certain conditions already existing in practice as approved by the Institute:

The American Institute at present classifies its members in two grades, advancement to the higher grade being made for meritorious performance by action of the Board of Directors.

The first step in this substitute is suggested by the method of conducting the first stage of the recent competition for the Missouri State Capitol Building, which originated with the Standing Committee on Competitions of the Institute. In this case all architects desiring to compete were required to present a record of their qualifications with photographs of buildings erected under their direction. From these records a jury selected ten names, any one of which were declared competent to act as architects of the proposed building with entire safety to the interests of the state.

This first step then would require that the Institute classify its members in the same manner as at present, but into numerous divisions, according to educational qualifications and the extent and merit of their executed work. All buildings may readily be classified into corresponding divisions according to cost and importance.

The proposed method of procedure would then be as follows:

When a government, corporation or individual desired to select an architect for a building of, say the first class, they would apply to the Institute for a list of qualified architects in the corresponding class. Should a direct appointment be undesirable for any reason, ten or twelve names might be selected from this list, any one of which would be competent for the proposed employment. These ten or twelve architects would then by lot choose one of their number to prepare preliminary sketches at the customary compensation. In case these sketches should not prove acceptable the process would be repeated until a satisfactory solution of the problem was obtained.

The application of this method would:

1st. Conserve the interest of the employer in securing competent service.

2nd. Relieve the unsuccessful competitor of useless labor and expense.

3rd. Avoid the humiliation of implied inferiority endured by all unsuccessful competitors under the present system.

*Extracts of an address delivered at the annual dinner of the St. Louis Architectural Club

Commercial High School Propped on Rollers Ready to be Moved

Moving a Steel Frame Building Three City Blocks

UNUSUAL interest is being taken by both the architectural and engineering profession of San Francisco in the task of moving a steel frame and brick school building from its present location in the new Civic center to the northeast corner of Fell and Franklin streets, a distance of three long blocks. The structure is known as the Commercial High School and was only recently completed at a cost of $261,000. It is three stories, 180 by 120 feet, and weighs over 70,000,000 pounds. This huge mass of steel, concrete, brick and timber will be transported on wheels in much the same manner as a frame house is moved.

While the task appears to be almost insurmountable and fraught with the greatest danger of demolition of the building, J. M. Nichols, who has undertaken the actual work of moving, says there are no really difficult engineering problems involved. He says that the moving will take but a comparatively short time after the building has been mounted upon a steel shoe or cradle ready to be pulled along by donkey engines and steel cables, properly rigged, upon a track of steel girders and wooden beams laid on a foundation sufficiently heavy to support the immense weight.

The slightest miscalculation in estimating the varying stress and strain in lifting the structure and underlaying the elaborate running gear of steel rollers probably would result in irreparable damage.

Every structural detail of the building has been studied by the engineers in charge and the details of the operation have been figured down to a nicety.

In order to get timbers of the right kind to be used in the construction of the track and cradle, it was necessary for the contractor to send a logging crew into the woods and cut trees from which long beams have been sawed.

If there are no unforeseen delays the structure will be pulled forward about 50 feet a day. The route will be west from the present location on Grove street, across Polk street to Van Ness avenue, south on Van Ness avenue to the Library lot, where it will be moved westerly along the north side of Fell street to within a short distance of Franklin, its ultimate destination. The contract price to be paid for moving the building and restoring it in its entirety is $152,000.

Architecture at Delhi

AN interesting architectural problem has been raised by the removal of the capital of India from Calcutta to Delhi. Shall the magnificent new city which is to be constructed with a view to impressing the people and giving expression to the greatness of the empire be an imitation of native architecture? Or shall it be made expressive rather of the ruling caste? Both sides have been vigorously supported. The English architect, Henry Baker, discusses the whole question in the London Times, and decides in favor of the classical style of Jones and Wren and their followers in the eighteenth century. Gothic he at once dismisses as suited only to nothern skies. Of the indigenous style he says with British solidity:

> While in this style we may have the means to express the charm and fascination of India, yet it has not the constructive and geometrical qualities necessary to embody the idea of law and order which has been produced out of chaos by the British administration. Our admiration for the old architecture can surely best be demonstrated by leaving the buildings of old Delhi alone, sacred as the monument of the empire of the Moguls and unsoiled by imitation in the new city. We could, it is true, by tracing back this Mogul architecture to its origin, found a new style on the Saracenic of Cairo and Damascus. In skilful hands, no doubt, a beautiful city would result, but it would not be typically Indian and still less would it be British Indian. Should we not be guided by a truer and more natural instinct if we fearlessly put the stamp of British sovereignty on the monument of the great work of which we should be so proud? By so doing, we should be following the precedent of the Greeks, the Romans and of the Saracens themselves when later in their history they had put their own impress on the arts which they had at first absorbed.

There is, however, this fundamental difference that when these peoples extended their empire they did not have to select a style. They took, on the contrary, the style they had, so that coming upon a Roman ruin in the sands of Africa is like coming upon a piece of Rome itself. It cannot be said that a city built in a twentieth century imitation of seventeenth century British imitation of Roman and Grecian architecture would be like coming upon a piece of London. Probably the avoidance of comparison with Mogul architecture is wise; it is at any rate discreet. Delhi has nothing so beautiful as the Taj Mahal at Agra, the most exquisite building in the world, but its remains of the old empire are splendid, and competition would probably be disastrous.

On the whole, the choice of the classical style is perhaps as satisfactory or at least as safe as any, but it may be doubted whether the Inigo Jones and Christopher Wren variety of it should be taken as the standard. Both achieved fine individual building, but they by no means represent the full beauty and purity of the style which Greece carried to its utmost perfection and which Rome made coarser, but stronger to fit the needs of empire. Lord Curzon supports Mr. Baker in the contention that the Mogul style, with all its magnificence, is impracticable, but for different reasons. That style, he says, was well suited to the needs of Oriental potentates, but does not lend itself to the work of a bureaucracy. Of the life of the native Princes he says:

> His women were shut up, almost barricaded off, in a separate building; his receptions were held in halls open to the air and were attended only by men; his private quarters were small and almost unfurnished; windows and glass as we use them were unknown; the work of his public offices was often performed out of doors or in stray corners, with little method, comfort, or order; he had no council or Parliament other than a public durbar. His palace in all probability required to be surrounded for safety's sake by great battlemented walls and resembled a fortress.

For this reason he is driven to advocate the classical style, yet as a matter of fact the Greeks who created that style were almost equally far

from the mode of life practiced by modern Englishmen. Of course, it has been adapted, and with not a little success, to modern life as well as to the uses of imperial Rome. But the question suggests itself why, if Greek art has proved so flexible, the art of the Moguls might not also endure a transformation to new uses if studied with enough care and sympathy. It would be a more difficult undertaking, if only because architects are schooled not only in ancient Greek and Roman work, but in modern adaptations, and can easily realize a kind of conventional correctness, even if they fall short of real creation. But with Oriental architecture the case is quite different; its application to modern uses cannot be learned at school.

This would be the bolder and if successful the happier solution of the problem, but the wisdom of attempting it in the present chaotic condition of architecture is doubtful. India has already, as Lord Curzon points out, too many monstrosities built by the English. For this reason, also, it would be rash to follow the advice of those iconoclasts who urge that the historic "styles" be discarded altogether, and a new creation attempted, based on the function of the buildings. In theory this is very pretty; in practice it is apt to result in freak buildings which are startling when new, and hideous when the newness has rubbed off. Such experiments should be saved for less crucial cases; in Delhi it is highly important for the Government not to fail, and without undertaking to say which would be the ideal course the opinion may be ventured that some form of Greco-Roman art is the best play for safety. Gothic, of course, is out of the question, though there are Gothic buildings in India, and very much out of place they look in that land of hot high suns. But the classical style, born in a warm and sunny clime, would fit India better than it does London; there would be no difficulty on that score. To use for the standard, however, the British classical of Jones and Wren would be a serious mistake. It would be far better to go back to the source, using Hellenic forms as the norm, and working with a free hand. By adding Asiatic touches the classical style might perhaps be modulated into harmony with the old Delhi without coming into competition with it—it ought to lean toward Constantinople and Damascus rather than toward London and Sir Christopher Wren. At its worst such a working out might be tame and dull; at its best it might be a superb achievement in the group architecture to which the regular classical forms so readily lend themselves.—Springfield Republican.

* * *

Elevators a Modern Invention?

The recent excavation in Palestine will shortly be opened to the public. When the clearing of the rubbish from the atrium of Domitian's palace has been completed an excellent view will be obtained of the vast impluvium of the palace of the Caesars. This colossal fountain had a capacity of 1,000 cubic meters. The water was distributed in lead pipes from Nero's aqueduct fifteen feet below the impluvium.

The foundation of the golden house and earlier Caesarian dwellings have been laid here. Below these have been found pre-Romulan remains, including twelve ancient elevators. One of these lifts is now being cleaned and put into working order for the archaeological congress next month.—London Daily News.

Application of Tile to Concrete

By JOHN WYNKOOP

THE intensely practical advantages of concrete have so impressed themselves upon the public that there is no longer any question as to its use from that point of view. The beauty and treatment of concrete surfaces, because of this utilitarian development, have not received the important study warranted by the nature of the material. A few authorities advocate leaving concrete surfaces just as they are when the rough forms are removed. However meritorious this may be, the majority of architects look upon concrete as a material which from its very nature gives a most extended opportunity in surface decoration and color. Architecture in stone is essentially dependent upon architectural lines—shade and shadow—whereas architecture in brick or concrete is dependent upon the actual treatment of their surfaces for their character and effect.

From this viewpoint, which is that of the majority of architects, any material enriching the surface of a concrete wall without interfering with its structural strength is possible and worthy of consideration. Of stone, brick pigments and tile, the latter is, undoubtedly, best adaptable because of its beauty and extreme simplicity in application. In France, Italy and America, the application of tile to concrete surfaces has been considerably exploited, so that many actual examples exist upon which to base an opinion as to the effect produced. From these and from the general principles of design involved, it may be seen that extreme accuracy of tile setting as we know the material in general use is harmful to fine effects and not to be desired. Concrete, especially for exterior use, should be sufficiently rough and uneven to insure artistic surface modeling when seen from a considerable distance. This necessitates a free and varied treatment of any tile applied to it, both as to setting and as to coloring. The color of the concrete itself, in the main, determines the color scheme of such tiles as are applied to it. Rough and deeply colored tiles are found to blend most easily with the rough surface of the concrete, although it can easily be imagined how certain bands or spots in tile could be both highly colored and finished to bring out accents sought after by the designed.

Especially in country house work the application of tile must be concentrated largely because of the costliness of entirely covering the concrete. As a matter of effect, from an artist's point of view, what a concrete surface needs is contrast with some material which is more refined and decorative than itself. Panels, band courses or scattered designs in tiles so long as they do not become all over patterns, seem particularly advisable in this kind of work. As much depends upon concentrating this decoration as does upon an intelligent selection of colors and an artistic placing of the individual tiles. Without doubt there can be no limit to the ways in which tile employed in this way may be treated. Practically any size and shape, any color, any surface are being manufactured continually, and along with this molding and special colors and combinations may be obtained, provided the manufacturer considers the amount to be ordered as warranting him to produce special ideas in this way.

In fact, a rather new and certainly delightful avenue of designs has been opened to the architect by the increasing prominence of concrete and its allied arts and materials.—Mantel Monthly.

"Patent-Medicine" House Planning

By V. O. WALLINGFORD, Architect, San Diego

DO you remember the booklets that used to be left on the front steps, or in the front yard, describing the various alarming symptoms that demanded immediate and copious draughts of sarsaparilla at a dollar a bottle?

If there was nothing the matter with the reader to begin with, the reading would develop the need of medicine, if he had any imagination.

And the beauty of the whole scheme was that no matter what the ailment, it could be readily cured with from one to ten bottles of the medicine, and the cost need not exceed five or ten dollars, whereas to consult a licensed physician might cost two dollars and a prescription—if needed—for less than a dollar.

I received, the other day, a folder in which there were printed some fifty cottage plans, and the information that a set of the plans ready for the builder could be had for ten dollars. Or if changes were required, at an additional charge—and I had an idea—that the time has come for some one to put forth this advertising:

"Have you ever had the feeling that the house you live in, is not your own?

"Have you ever felt that you ought to have one of your own?

"Does the house have a 'Full-feeling' after the children come home from school?

"Does the house need painting, or other repairs?

"Does the plumbing leak, the fireplace smoke, the furnace fill the house with a bad odor—especially after firing up?

"Does the grass grow in the flower beds and gravel walks, while it sunburns and dies in the lawn space?

"Does the water refuse to flow through the pipes after a severely cold night?

"If you have any of these symptoms, or all of them, or others that we could mention, you are undoubtedly more or less advanced in the malady of BUILDITIS, or BUNGALOWITIS.

"Either of these diseases can be readily cured if taken in time, but the more advanced cases require much more persistent treatment than the incipient attacks. Write the Doctor a personal letter describing just how you feel, and he will give you a special course of treatment exactly fitted to your individual needs.

"What you need is a set of bungle-oh plans out of our book, which will be sent forward on receipt of ten dollars.

"The Doctor will select the size and details, to fit your special needs, and the treatment is guaranteed to cure you."

Well; I dreamed that I saw just that sort of an ad and I answered it, and I am going to recall the rest of the experience, and tell you of my cure.

The "Doctor" wrote me a personal letter on a Linotype machine and printed his name at the end, so that I knew whom it was from, and described my symptoms exactly, telling me how I was situated and what the case demanded.

Moreover, he sent the medicine, all nicely blue-printed and bound together with metal eyelets and a manila paper cover, together with a set of printed directions for taking the treatment—he called them the "specifications," though I thought at first that they were some more advertising.

There was one copy each of the blue-prints and specifications, but I didn't know but what that was enough; that is, I didn't know it at first.

The little wife and I spent the evening after the treatment arrived studying it out. It didn't quite fit, but we worked out the changes that we thought were needed; really amounted to nothing at all, we thought, and I wrote the building company (I am going to call it by that name instead of "Doctor") for information on that score, and to inquire about the changes that we thought ought to be made in the treatment.

The information was that the changes were perfectly reasonable, but that it would require a little labor on the part of the draftsman who had

worked up the drawings, for which I would doubtless be willing to pay—it wouldn't be much. If I would remit five dollars, it would undoubtedly entirely cover the expense, and any balance would be returned to me by check. I fell for it.

By return mail, came the new prints, but nothing had been done with the specifications, and nothing was said about the balance. Still, it looked pretty good to us, and I gave no particular thought to the second remittance—at the time.

I knew a carpenter and builder over on the other side of town, and so Sunday afternoon, the wife and I went over to see him and maybe get a real start on our BUNGALOW—Oh, by the way, I forgot to say that we had saved over a thousand dollars, besides having a lot and a half, and thought to build a twelve or fifteen hundred dollar home, you know.

We began with that carpenter in a casual kind of way, inquiring about his children, and the chickens; the building business in general, and the Unions in particular; the advantages of concrete for bridges, and for railroad construction; but finally got around to the real object of the visit. The first thing the man asked us when we showed him our plans and specifications was: "How many sets of these have you?"

We told him, one.

"Are you going to get figures from one or more than one contractor?

We hadn't thought of that.

"You ought to have at least three different men figure it for you, and then select the best man. Sometimes there is a difference in cost, or conditions governing the work so that an owner gets the advantage, and the contractors expect to figure in competition. It will pay you.

"You will need several sets to save time, anyway."

We saw the point, and then asked more questions, about cost of building; contractors in general and contracts in particular; building permits, city ordinances, and things like that; and learned that after the bids were received and a contract made, a Building Permit had to be secured from the City Building Inspector; a Plumbing Permit; Electrical Wiring Permit; and a set of plans and specifications left at the City Building Department for reference; and copy to be filed with the contract with the recorder of the county; the contractor furnished with probably two sets of plans and specifications; some one to superintend the work, etc.

Altogether we learned that there would have to be provided not less than five, and probably seven sets of the plans, and at least four sets of the specifications, to properly carry on the building operations.

When I got back home that evening, I wrote the building company asking about additional copies of my plans and specifications, and requesting them to be forwarded immediately. I received answer in a day or two, that I had been furnished plans and specifications as ordered and payment therefore was acknowledged. Additional copies were considered to be additional "Plans and Specifications" and would be forwarded on receipt of the regular price for such.

I began to see light (after the redness of the atmosphere had disappeared somewhat) and also to realize that I was being rapidly cured.

I'd paid fifteen dollars already, and would have to pay sixty dollars additional, if I got all the sets it seemed probable that would be needed. Besides that I would have to "take the figures;" let the contract (or hire a lawyer to do it at five dollars for drawing the papers); superintend the work without knowing anything at all about it; take a chance on a number of other things as the work progressed.

Well, we did not build that year, but all the summer and the fall we were taking a lively interest in what other people were building, though

never once had we thought of any but the building company as a source of plans, until one of my wife's friends spoke of her architect.

Here was light from a new angle.

"What about an architect? What does he do besides draw pictures of carefully crumbled 'Beaux Arts,' temples and world's fair colonnades? They don't make house plans do they?"

"Of course they do. They will make the plans just as you want them, only of course so the building can be built, and take the figures from the contractors; make the contracts; and furnish as many sets of prints and specifications as are needed for the work; and make the details; and superintend the work, and get the contractor to do it the way we want it, and —oh, there are ever so many things he thinks of that we never would have dreamed of. Don't cost any more either to have your house built the way you want it."

"Yes, but isn't it awfully expensive? Don't the architect charge like everything for doing that?"

"We have paid our architect seven and a half per cent on the cost of the house, and he has looked after everything down to the minutest detail. My husband says he wouldn't do it for twice the fee."

So the conversation was reported to me when I came home that evening, and the light penetrated; slowly at first, but gradually.

We built a three thousand dollar house last spring, and the architect's fee was six per cent.

Personally, I think he earned every cent of it, too.

After all, I believe that the only people who take patent medicines and who follow quack doctors are the uninformed. The regular physicians seem to be doing their share of the healing.

* * *

The Profit Sharing Plan

AT a recent dinner in Philadelphia, at which were gathered together the members, associates and employees of a leading architectural firm, the senior member of the firm gave a brief address explaining the profit-sharing plan which had been decided upon by the firm.

The division of the profits is upon a two-fold basis: a certain amount is set aside from the profits in which all of the employees share equally, irrespective of their salaries. There is also a division of an additional amount based upon the proportion which each employee's salary bears to the total amount of salaries paid. It was announced that the past year had been the most successful and involved the largest amount of business that the firm had ever handled, and stated that this result was due, in a great measure, to the efficiency and co-operation of the employees, which it was their desire to recognize in a substantial manner.

Profit-sharing has been practised by this firm in the past to the extent of sharing a certain portion of the net profits with the heads of the several departments, which has proved so satisfactory that the firm decided to extend the plan to all of its employees, from the highest to the lowest, believing thereby to obtain an increased co-operation and efficiency throughout their entire force. No pretense is made by the firm that the profit-sharing plan is a form of philanthropy. The firm believes that this is the first application of profit-sharing on such a general scale that has been made in the architectural and engineering professions anywhere.

[We understand that the architectural firm of Willis Polk & Company of San Francisco is operated on the profit-sharing basis. The success of this firm has been phenomenal. At the present time its business exceeds the $5,000,000 mark.—Editor.]

PRODUCTS OF MERIT THE UP-TO-DATE ARCHITECT SHOULD SPECIFY

In this Department there will be printed from time to time articles dealing with new materials and inventions that appeal to the intelligent builder as desirable from both the practical and money saving standpoints.

Light House Prison and Barracks Building Alcatraz Island Cal. Finished with Liquid Stone

Exterior Damp-Proofing — Liquid Stone

CONCRETE construction while very popular has some faults that cannot be overcome within itself. It is porous, it is absorbent and green concrete is caustic. Some outside agent, therefore, must be used to overcome these faults which are serious.

Most compounds that are mixed with the concrete before it is poured, have a temporary chemical action on the cement, and the greater percentage of them gradually disappear through the action of the elements and through the action of the concrete itself. What, therefore, is the best protection for this type of construction?

Architects are very particular in specifying how much gravel and how much cement shall constitute the proper mixture for concrete walls, and their Superintendents of Construction are very alert to see that these specifications shall be carried out to the letter. But when it comes to exterior damp-proofing and finish, it is evident that a great percentage of architects have given the matter of protection to concrete construction very little, if any, thought.

The question of price seems to enter largely into specifications for damp-proofing and were the owner of the building informed that it would necessitate his going to the expense of re-finishing his building every two or three years, if certain so-called damp-proofings, were applied, his thoughts would not look well in print.

What, then, constitutes a perfect damp-proofing? Surely not tar or pitch, for a building with unsightly black walls must be re-finished every two or three years; the sun making short work of either of these materials. Surely not a coating, the base of which is casine, for casine contains grease that is cut by an acid, is held in solution long enough to apply and will disappear from a concrete surface inside of a year. Surely not a coating containing glue, for while glue will withstand the elements a trifle longer than casine, it will soon rot and drop off.

Surely not a coating containing China oil, linseed oil, turpentine, paraffine and benzine, lard and lime, lead, zinc or any of that family, for

they all hold to the surface by film contraction and their life is from two to three years. And green cement being caustic, will burn the life out of any of the oil products in a very short time.

A damp-proofing therefore, to be perpetual and one that will last as long as the concrete itself, must not contain any of the above materials. It must be a composition of minerals that are absolutely impervious to any and all atmospheric conditions, sun and temperatures and one that will harden as it ages. It must find its foothold in the pores of the concrete, at the same time filling them, and it must not be ready mixed, for a ready mixed paint will not set much harder on a wall than it will in the can.

This then leaves the field open to the mineral paints, preferably those of the magnesite family, for it has been demonstrated beyond doubt that magnesite when properly mixed with other ingredients, has no equal as a permanent coating. It gets as hard as flint and is held as a veneer by the many small tendrils that have filled the pores of the cement surface.

The Liquid Stone Paint Company of San Francisco were the first manufacturers of magnesite paint to discover that magnesite required other products to make it adaptable as a damp-proofing. Magnesite will set very hard when applied by itself, too hard in fact, so that it was necessary to use other materials that had an affinity for it, that would control it and not allow it to acquire its surface hardness before the hardening action in the pores of the concrete had taken place. Thus it is sometimes three months before Liquid Stone will reach its final hardness and take on a mat-glaze.

The assertion has been made that a paint that is not fireproof cannot be damp-proof. This can be easily proven. Get a sample of wood of each

Y. M. C. A. Building, San Francisco *McDougall Bros., Architects*
Over 60,000 feet of Basement Walls Waterproofed and Finished with Liquid Stone

make of damp-proofing that is handled in your territory and apply a blow-torch to it. If it burns, it denotes the presence of animal or vegetable matter. If the ash is black—animal. If the ash is white—vegetable. If it will not burn, it will withstand the action of the sun for all times and will be a perfect damp-proofing.

Liquid Stone will not burn, is fireproof as well as damp-proof and has been aptly called "The Paint Eternal."

* * *

Structural Tones and Counter-Tones

HAVE you ever noticed that gray colors in structural exteriors of any kind, except perhaps those resulting from weathered masonry, possess a singular lack of harmony with their surroundings?

This occurs as positively in the city street, as in the village lane, or natural landscape, under any but the most sombre lights when all colors tend to fade toward the neutral.

Take a single example of random: a street is lined with houses, some built of brick in warm or dusky tints, some wood, stained or painted in clear colors, and perhaps a few from the time when stone was still much used. One frame house is painted a glistening gray. It seems distinct from its surroundings, lacking in the receptive, inviting color value which insensibly gives the impression of comfort and life within.

The reasons are well known. Combining the individual's summary of sight impressions with the same impressions of our ancestors. In other words gray is the tone of the approach of night, and more vividly of the coming storm, and the storm itself. Further back in radical memory is the deep rooted recollection that where there is plenty of sun light food can be gained with less toil than in the inhospitable climates with gray days of snow, mist and rain.

It is just such questions as this of proper color and tone treatment which are receiving constantly increasing attention among architects and structural designers generally, in this country.

Of course, in commercial constructions such as office buildings and factories beauty of design and treatment, must, and properly should be, entirely secondary to practical utility in almost every instance. It is fruitless to hope that the former can gain any very widespread attention among business men for many years to come.

The home, the church, the appartment or public building, however, are matters of a very different nature. The architect who attempts today really genuine creative work along these lines must have a thorough knowledge of color values, their history as related to each other in nature, as well as their significance in masses, detail, flow of line and similar subjects.

Consider one phase of this a moment. The practical economy and great utility of concrete construction have long been recognized. In commercial buildings the gray color of concrete resulting from the use of Portland Cement has never proved an objection because of the great value of the material itself.

There has been some hesitancy, however, among architects in the use of gray concrete in construction where beauty of appearance has been a properly large factor, as in residences.

This has accounted in a measure for the tremendous popularity of White Portland Cement for such work because it combined the practical

and esthetic features to great advantage. For one thing it can be readily colored to meet individual requirements.

Another interesting development in recent years has been the notable increase in pure contrast in exterior treatments as a means of projecting structural mass of detail from its surroundings, at the same time retaining a proper harmony in the complete view.

Perhaps the most judicious means of securing such contrast, at any rate a means which is rapidly growing in favor, is the use of pure white against darker tones in the building itself or its surroundings.

For instance a house of white cement stucco is in delightful contrast, and at the same time entire harmony with the green of summer foliage, or with other houses of warmer tints, and if properly placed and grouped, decidedly effective in winter, spring and fall as well.

Its sincerity of effect compared to the uncertainty of gray is instantly observed by even the untrained eye.

Another use of white cement is in the making of artificial "Cast Stone" for garden ornaments, benches, urns, statuary and the like. When crushed marble or other hard stone is used in the aggregate a very high polish can be given to the stone by rubbing if desired, or washing the thoroughly hardened and dried concrete with diluted muriatic acid will give a brilliant sparkling finish.

Cast Stone is usually made in plaster of gelatine moulds. For such work a quick setting white is desirable, as this permits the prompt removal of the moulds.

An increasing use of white cement is in interior decoration. Staircases, wainscoting, floors (and often entire stucco walls of white in bathrooms, kitchens and laundries) are becoming more and more common because of their beauty, permanency and cleanliness.

The admixture of hydrated lime in such work with white is growing, as it tends to render the concrete waterproof and lengthens the setting time.

In large structures such as office buildings white cement is particularly valuable because of its non-staining feature for laying and backing stone, which it absolutely will not discolor. It is this advantage which caused the use of many hundred barrels of Atlas White in such buildings as the new Grand Central Terminal and Municipal Building in New York, the forty-two story Smith building in Seattle and the giant Union Central Life building in Cincinnati.

Atlas White Portland Cement combines the well known high quality and uniformity of Atlas with a particularly pleasing color.

It has been used in buildings in practically every section of the country—noteworthy evidence of acknowledged value.

* * *

One of Our Future Engineers

A professor at a well known California college says that but for occasional innovations in the application of learning, such as the following, he would find it hard to judge the extent of his usefulness.

This question was asked upon an examination paper: "What steps would you take in determining the height of a building, using an aneroid barometer?"

The answer was: "I would lower the barometer by a string and measure the string."

The Passing of Wax Finish

THE use of wax which has been so much in vogue for several years for interior finish of homes does from its very nature condemn itself, and architects are rapidly discontinuing its use. As there are so many good flat varnishes on the market that produce practically the same effect and are so much more durable it is not to be wondered at.

To begin with wax is unsanitary being a breeding place for microbes. It is not durable, as it will not resist the action of water, nor stand the rays of sunlight—woodwork once finished with wax can never be refinished with any other material without great expense in removing the old wax finish. None of these objections can be urged against Flattine varnishes, for on the contrary if they do not contain **wax,** are very durable.

In this connection it is suggested that under no circumstances should painters be permitted to make their own flat varnish by putting wax into varnish, as the same objections would apply to this as to a wax finish.

A further and more potent reason for the abandonment of wax as a finish is the use of White Enamel which has so rapidly come to the front in the last two or three years. We no longer see the woodwork of bedrooms finished with a dark somber stain, white enamel has come into its own. With the modern way of making this material we no longer have the doleful yellow effect that the older ones remember when they recall their younger days and view again the "parlor" once finished in white now with age in the "sere and yellow." With the improved manner of making white enamels like "Satinette" and others that will not turn yellow, this style of finish is a "joy forever."

However, that which is true of other materials will also apply to white enamel. So called "cheap" enamels give cheap effects. They are not durable and do not cover so well. A high grade enamel looks well and wears well.

Wax on floors for the same reasons given above is being very largely discontinued and floor varnishes are rapidly taking its place.

* * *

The Use of Marble in Lighting

It is reported that patents recently have been taken out in Germany for using marble instead of glass in lamps, which medium has the effect of making the illumination scarcely distinguished from daylight.

A number of experiments have been made with tinted and patterned types of glass with the idea of producing this effect. Marble was planed down until it was somewhat transparent, and then different intensities of light were shown from behind. The result was exactly what so many hundreds of experiments had failed to produce. Developing this discovery, the inventors fitted lights to the cornice of a room so that it is difficult to realize that it is artificially lighted.—Good Lighting.

* * *

Work of Portland Concrete Pile Company Criticised

The Supervisors of Yuba County have begun an investigation into the methods of the Portland Pile and Concrete Company in the construction of bridges over the river at different points on the State highway. According to charges made by C. W. Addington, a former employe of the concrete company, the bridges are not being built according to specifications. Addington testified that footings were being put in one foot short and instead of leaving space for the steel in the concrete to expand, the space was being filled with concrete.

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October Number Wanted

A subscriber wants to complete his 1912 Architect and Engineer file with the October number. Twenty-five cents will be paid by the publishers for one or more copies of this issue.

WORK IN ARCHITECTS' OFFICES

SAN FRANCISCO.

FREDERICK H. MEYER, Bankers Investment Building, is finishing drawings for a six story apartment house for the Schmidel estate to be erected at Post and Leavenworth streets.

He has let most of the contracts for a six story apartment house for Messrs. Trowbridge and Perkins in Sutter street.—Bids have been taken for a three story class C. store and rooming house on Mission street for C. S. Howard.—Plans are practically finished for several concrete and brick sub-stations for the San Francisco Gas & Electric Company.

JOHN REID, JR., Chronicle building, has let segregated contracts for a six story and basement fireproof store and loft building for the Hind estate. The location is California street, west of Front and the estimated cost $125,000.

WELSH & CAREY have let contracts for a parochial residence on Diamond street for St. Phillips parish and the same firm will shortly let contracts for a seven story steel frame apartment house at California and Stockton streets for Sewell Dolliver.

G. A. APPLEGARTH has let a contract to Percy Walker to build a fifteen story hotel for the Cliff estate.—The same architect has plans for a two story reinforced concrete bank and apartment building for the First National Bank of Walnut Creek. Mr. Applegarth is also working on plans for a new town to be laid out in Contra Costa County by the R. N. Burgess Company.

CHARLES PETER WEEKS is making plans for extensive alterations to the residence of Fred W. Bradley on Broadway. The work is estimated to cost $20,000.

ALBERT FARR will let contracts shortly for a splendid city residence to be erected on Green street, near Divisadero, for Dr. Alfred B. Spaulding of the Lane hospital. The style of architecture will be English.

O'BRIEN & WERNER are completing working drawings for a $200,000 vaudeville theater to be built by Mr. Anderson, the moving picture magnate, on the site of the old Alcazar, opposite the Orpheum play house. The theater will be erected on the percentage basis by James McLaughlin.

C. A. MEUSSDORFFER has made plans for a $60,000 steel and brick smelting plant to be erected in Seattle by the Great Western Smelting & Refining Company. The same architect is making working drawings for a $250,000 department store building in Fresno.—Bids have been taken and contracts let for a three story apartment house at Clay and Leavenworth streets.

REID BROS. have the designing of the new John D. Spreckels building at Fourth and Market streets which will be 25 stories high and cost $1,500,000.—The same firm is making plans for a five story building for the Drexler estate and a concrete building for the Sharon estate.

JULIA MORGAN has completed plans for the new Y. W. C. A. building in Oakland which will cost $125,000 and will be of Class A design, with all the newest features to be found in the finest buildings of this type in the East.—The same architect is also designing the State Y. W. C. A. camp to be established at Pacific Grove largely by the generosity of Mrs. Phoebe Hearst.

WILLIAM H. WEEKS has let contracts for a $30,000 school in Burlingame, a $30,000 Methodist church in Palo Alto and a Municipal jail in Turlock.—The same architect is preparing plans for a five story Class C building to be erected in San Francisco.

FALSH & KNOLL have completed plans for a three story frame apartment house to be erected at Washington and Taylor streets for Miss A. Loaiza. The building will have every modern convenience and will cost $60,000. They also have a number of residences, including an attractive two-story English house for Dr. C. A. Kern in Mill Valley.

PHILLIP SCHWERDT has let nearly all the contracts on an eight story bachelor's hotel being erected at Post and Taylor streets. The same architect has finished plans for a four story concrete hotel for H. Wolf and brother.

WILLIS POLK & COMPANY are busy on plans for the $1,000,000 Municipal opera house; also a twelve story Class A. office building to cost $750,000 for the Hobart estate, and several minor jobs.

WILLIAM H. CRIM has taken bids for a five story and basement Class C. hotel to be erected on the north side of Market street east of Gough, for Bruce Cornwall at an estimated cost of $30,000.

G. A. LANSBURGH has the plans completed for the new Jewish synagogue to be erected in Oakland at a cost of more than $100,000. It will be a handsome edifice with stone and brick exterior.—The same architect has recently let contracts for a $10,000 hotel near Sacramento.—Bids have been taken for the new home of the Beresford Country Club, which is expected to cost close to $75,000.

JOSEPH CAHEN has half a dozen apartment and flat buildings on the boards and he has just recently let a contract for a three story frame apartment house for James Ward at Clay and Taylor streets.

HAVENS & TOEPKE have let contracts for a two story concrete building for Charles Kirkbride in Burlingame and working drawings are being made for a $40,000 residence to be built in West Clay Park for S. A. Born.

WASHINGTON MILLER has been commissioned to complete the working drawings for the splendid Traveler's hotel, originally designed by Cuff & Riggs of Sacramento. The hotel is in course of construction by the Ransome Concrete Company. The same architect has finished plans for a two story Class C. store and loft building at Jessie and Sixth streets, for Mrs. T. L. Barker.

MILLER & COLMESNIL are busy on the working drawings for a $100,000 addition to the Metropolitan Life Insurance building. The same architects have plans for a fine building to be erected at the gore of Market, McAllister and Jones streets for the Spreckels estate, and a six story building.

SMITH AND STEWART have taken preliminary bids for a fine family hotel to be erected in Sacramento. Construction will be of reinforced concrete, five stories and basement. Practically every guest room will have connecting baths. The estimated cost is $100,000. This firm has opened a branch office in Stockton.

SAN JOSE.

WOLFE & WOLFE, First National Bank building have two large apartment houses under way, one of which is for F. L. Mayhew and the other for J. B. Wolfe. Both will cost about $70,000 each. The same architects have a dozen attractive homes on the boards or in course of construction.

WARREN SKILLINGS has made plans for a new fire house for the city of San Jose.

WILLIAM BINDER has the new Garden City theater under construction besides a garage and several dwellings.

CHARLES McKENZIE has a two story brick and concrete store and apartment building now being erected in South First street.

A Plea for the Local Architect.

H A Blanchard writes as follows to the San Jose Mercury anent the recent Hester school competition, the selection of Norman F. Marsh as architect and the late ruling of the court declaring the appointment illegal:

The action of Thomas Livingston against the trustees of the Hester school district was brought to obtain an injunction to restrain the school trustees from paying Norman F. Marsh, the Los Angeles architect, any money under his contract, or proceeding further with him, on the ground that no legal notice or bond had been given as required by law, thus rendering his contract of employment void and illegal. Judge Welch, after due notice, granted a temporary restraining order as asked for and overruled the demurrer of the trustees. This is practically a final determination of the case.

As soon as the school trustees discovered that Mr. Marsh had made a most flagrant estimate on his plans he should have been at once discharged. This is what the Alameda Improvement club insisted upon. When an architect obtains his employment by stating that a $89,700 building can be built for $60,000 his advice is harmful instead of being beneficial. The school trustees should now start anew and give all architects a fair and impartial competition. To again employ Mr. Marsh can only be looked upon as going through legal formalities as a mockery. He is the one that is responsible for all of the unpleasantness and trouble in the Hester school district, saying nothing of about $11 a day for interest on bonds. When the people of the Hester school district voted $80,000 in bonds they intended that it should be used to develop this community and not Los Angeles. What we lack is local civic pride. That is all they have in Los Angeles. We excel them in every other way. An architect prepares specifications, and it would have been possible for Mr. Marsh to so specify materials that none other than Los Angeles contractors can meet the requirements, or at least others are at a great disadvantage. It is now nine months since the election, and they have wasted enough time with this architect. The plans as remodeled by him cannot be built for the sum they have to spend for this purpose, unless it is a wire lath and plaster building. This is the very thing that the people of the Hester school district, in a regularly called electors' meeting, decided they did not want. The trustees had called an election for $58,000 to build such a building and the electors forced them to rescind their action and call a bond election for $80,000 so as to provide for a reinforced concrete building. The trustees, as well as a committee from the Alameda Improvement club, represented to the voters that this was to be done. We will have nothing but a reinforced concrete building, making it fireproof and earthquake proof as nearly as possible. There is an advantage in having a local architect, and that is that he will be required to inspect the building every day during its construction. The contract with Mr Marsh provides that he should inspect the building once a month, and if he was required any more frequently he should be paid extra for that. This certainly is not enough. For $3000 we should have an architect that we can see on the job at least. The trustees should call another electors' meeting and allow the electors to determine what course to pursue. They are the ones that are paying for the building and are interested far more vitally than the trustees.

The people of the Hester district are paying about $8400 this year on school bonds and they are entitled to be considered

Can Practice Architecture

The following candidates have been granted certificates to practice architecture in California by the Northern District Board: J. L. Stewart, John J. Foley, Edward Glass, Chester H. Miller, Charles W Claudius, O R Thayer and Benjamin S Hirschfeld.

Small Army of Men Building the Fair Temples

Seven thousand men will be at work on the Exhibits Palaces of the Panama-Pacific International Exposition before the summer is over. As high as ten thousand men will be employed when the labor peak is reached. This number is exclusive of those who will be employed in the construction of state buildings and foreign pavilions. The states and foreign nations, it is expected, will conform to the pace set by the exposition company in the work of construction.

The plans of the magnificent courts, the designs for the imposing sculpture and the sketches of the mural paintings and decorations are nearing completion. Contracts for many of the groups of statuary and for many of the groups of paintings have already been let to prominent artists and sculptors in San Francisco, New York and other cities of the United States. The direction of the color has been entrusted to Jules Guerin, and Karl Bitter has charge of the sculpture.

Released from Hotel Contract

The Sacramento Bee prints the following:

"Maury I. Diggs and C C. Cuff, who were the architects for the new Travelers' Hotel, now being erected at Fifth and J streets, have been released from their contract by the Directors of the Marsh Investment Company, which is building the hotel.

"The dismissal of the architects was the result of the failure of Diggs to furnish the detailing and ornamental specifications promptly. According to W B Rohl, Building Superintendent, he had been after Diggs for several months to get out the plans, but delay after delay had been the rule. Because of Diggs' recent troubles it was believed he would not be in a position to furnish the necessary details for the building.

"Cuff and Diggs dissolved partnership since they won the competition for the Travelers' Hotel plans. It is said they were paid more than $1,500 for the drawing of the structural plans and had they completed the job they would have earned in excess of $3,000 more."

* * *

Architect Washington Miller of San Francisco has been retained by the hotel directors to complete the plans and check the work that has already been accomplished.

Removal Notice

Architect Maxwell G. Bugbee announces the removal of his office from 127 Montgomery street to rooms 328-30 Lick Building, San Francisco

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INJUDICIOUS CRITICISM

Representative Cooper of Wisconsin, is reported to have characterized the Post Office Department Building at Washington as a "cross between a cathedral and a cotton factory," and the Pension Building as "a lovely red shed that disfigures judiciary square."

Although architecturally the buildings referred to do perhaps leave something to be desired, they are, of course, not really so bad as Representative Cooper paints them. The American Architect cites the incident as one which again calls to mind the fact that there seems to be an unfortunate tendency among men in high public office to commit the indiscretion of stating in their speeches in Congress their opinions as to the artistic merits of various architectural designs, although their woeful lack of ability to do so intelligently has been many times demonstrated. It would seem that if the shortcomings of what is sometimes called "Government architecture" was really so apparent to our representatives in Washington, and so greatly deplored by them, they might with greater effect lend their support to efforts being made to improve it through competent channels, rather than to attempt to earn a little thoughtless applause by denouncing it before men usually no better qualified to judge of the matter than themselves. The passage of a substitute measure for the repealed Tarsney Act would gain sincere commendation from those who know.

MR. "ARCITECT" HERE IS MORE SPELLING REFORM

The simplified spelling board is at it again. Quem ad finem, as Cicero demanded of Catiline, sese effrenata jactabit audacia? The board began very discreetly in 1906 with a little list of 300 spellings for which there was already dictionary authority. Two years later a second list appeared which was almost as harmless, because composed largely of unfamiliar words restored

to obsolete spellings once in good literary use. A third list, giving four general rules, appeared in 1909. Since then the board has been engaged upon a vocabulary which is to be printed when the time is ripe. The time being still green, a smaller dose of reform is given in the "Fourth List of Simplified 'Spellings,'" a 16-page pamphlet which was published yesterday. After reading it one may fairly say that caos is cum agen.

The bulletin is printed in the reformed spelling, and its appearance is sufficiently startling; not without reason is the reader urged not to be "too much influenst by 'the od appearance of the word. Any change must look odd at first.'" That is true, and an argument for not meddling till the reform can be made once for all. These piecemeal alterations are very tiresome. The batch of changes recommended in the latest instalment is rather formidable. Dropping an h gives us such forms as cameleon, caos, caracter, casm, corus, arcaic, colera, cromo, cronic, cronicle, conc, epoc, mecanic, melancoly, monarc, scool, stomac. These spellings are familiar in Italian and Spanish; sooner or later they will find their way into English, but for the present the superfluous "h" does no great harm, although we must say that spelling ARCHITECT without the "h"—Arcitect—leaves a very bad taste.

It is very well to prepare and discuss tentative lists but to act upon them is a different matter. The main point is to have a standardized spelling, and the one we have should be left intact till another is ready to take its place. The board thinks that it has gone as far as it can without amending the alphabet. But that is only half-way. No really satisfactory reform is possible till we have an alphabet capable of representing adequately all the sounds of the language. When the alphabet has been revised and the language smoothly expressed in it as a Latin language can be expressed in the Latin alphabet, it will be time to consider spelling reform.

Architect Wright's Trip Abroad

Mr. G. Alexander Wright, San Francisco's well known architect and member of the firm of Wright, Rushforth and Cahill, is again at his desk after an absence of five months. Despite an illness which confined him to his domicile in London for five weeks, he managed to get about considerably, and succeeded in transacting the business which was one of the purposes of his visit to England. On October 31st, Mr Wright attended the annual dinner of the old officers of his regiment—the 4th East Surrey—where he was warmly received by such earlyday comrades as still survive. He was formally admitted as a member of the Royal Institute of British Architects, and by special invitation attended a meeting of the Council of the Quantity Surveyors' Association, of which he is the sole foreign honorary member, later attending a conversazione of the society at Connaught Rooms, London. He visited Nottingham, Norfolk, Isle of Wight, Somerset, Salisbury, Southampton, Portsmouth and other centers of interest, finally sailing for New York from Liverpool, February 6, on the White Star liner "Baltic," which encountered very rough weather on the Atlantic.

When in London, Mr. Wright, as honorary secretary of the British Residents' Committee, Panama-Pacific Exposition, had several interviews with the chief officials of the Board of Trade, and was able to give them much valued information concerning San Francisco and the exposition. These interviews had good effect, it would seem, in the light of later developments.

At New York and Chicago, Mr Wright spent several days with professional and social friends, taking advantage of the opportunities to look into hotel and other constructions, as exemplified in the best practice there. Notwithstanding all he had seen of interest and delight, however, San Francisco looked good to him when he finally landed at the Market street ferries.

Announcement of the Delhi Architects

The official announcement that Mr. E. L. Luytens and Mr. Herbert Baker, with Sir Swinton Jacob associated, have been appointed architects for a Government House and another important building at Delhi, India, has been made

While the matter is by these appointments not yet settled, it is probable that this action will serve to stem the tide of the controversy that has waged in the English press as to the style of architecture best suited to this important project

All of the men appointed are regarded as eminently qualified to set about the task assigned them, and the initial results will be looked for with much interest not only in England and India, but in America as well

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Essentials in Concrete Road Building

By W. A. McINTYRE.
Road Engineer of the Association of American Portland Cement Manufacturers.

ROADS being built today require close supervision over every detail of construction in order that their life may justify the money put into them. There are many little points essential to the success of Portland cement concrete roads, and these are so often overlooked that a mention of them at this time is advisable. My statements are confined to country roads where there are no curbs and gutters, but the construction of city streets is practically the same.

A foundation, dry and firm, with a covering which will not allow water to pass through it, is the chief characteristic of a road of the best type.

If the subsoil is of a character to retain water, it is very important that such a system of underdrainage be installed as will carry the underground water from beneath the road. In the dry summer weather this work may not appear necessary, but information should always be obtained regarding the action of the subsoil during the wet season and when frost is coming out of the ground.

There are, of course, many soils of a gravelly, sandy, or other character which are self-draining and do not require particular attention, but it is a fact that the defects in most of our country highways which are built upon clay soils or those which do not drain themselves, are to be attributed to a lack of drainage. There are two general methods in use to dispose of the water. One is to lay a 3-or 4-inch land tile under the shoulder and about 12 inches outside the edge of the concrete. The ends of the tile should be placed close together and clean stone of at least 1½-inch size put on the sides and top of the tile to a depth of 3 or more inches. If there is any danger of dirt reaching and getting through the joints, the upper half of the tile at the joints should be covered with paper before the stone is put upon it.

The other method is to lay a French drain in the same position. With this type of drain the best results are obtained by placing in the bottom flat stones of 6, 8 and 10-inch dimensions. These should be laid in the form of a culvert and should be covered to a depth of about 6 inches with smaller stone of not less than 1½-inch size. The width of the ditch should be about 12 inches. In both cases the depth of the bottom depends upon the character of the subsoil, but should in no case be less than 18 inches below the finished grade of the road at the crown.

If the soil is such that water passes very slowly through it, lateral drains of the same type leading into the side drain will be necessary about 50 feet apart, and possibly another longitudinal drain on the opposite side will be advisable.

When the back fill is thrown over the drain, it should be thoroughly puddled and compacted with hand rammers so as to prevent any settlement. With the water out of the way, the subbase should be compacted until there is no creeping in front of the roller. The usual custom is to use a 10-ton roller run over the base once or twice, and call the job done irrespective of the condition. Such a method compacts only a thin crust on the surface, and this is all destroyed before the concrete is placed. Better results can be obtained by using a lighter roller, say, of 5 tons. This will necessitate running over the road many times; consequently greater care will be exercised and a stronger subbase result.

The evenness of the subgrade is of great importance. The shape may be flat or curved, but there must be no humps or depressions. The concrete must have every opportunity for easy movement in order to adjust itself to temperature and moisture changes. Should there be irregularities in the subgrade the free movement is restricted—the friction on the base is increased—and since the tensile strength of concrete is quite low, cracks will form in irregular lines. When a mixer is used, it should be run on planks in order that the subgrade will be kept in good condition. If the concrete road is being laid over an old macadam or bituminous road, and if the base of the same is intact, it is often inadvisable to remove it unless the old grade cannot be raised. All the humps should,

however, be removed and all holes filled in with stone and thoroughly rolled. This brings up rather a serious question. Concrete needs but a light transverse grade to shed water. Other types of country road have a heavy crown. Therefore if concrete is laid on top of an old road, it will be necessary to have the required thickness, say 6 inches, at the crown, and let the thickness of the sides come what they will or to bring the sides up to grade with stone thoroughly rolled. In the first case the concrete will have the thinnest section along the normally weakest line. In the second case, unless the new stone is screened and made temporarily impervious, otherwise a macadam road built, there will be so much water and cement lost between the stones that the concrete at the sides will be considerably weakened.

At all times the subbase must be thoroughly wet before any concrete is placed upon it. Particular attention must be paid to this during the dry summer months. This work does not keep a man busy all the time and on that account is often neglected, but some one should always be delegated to perform it. If it is not done, water will be absorbed by the base and there will not be the required quantity in the concrete to allow of a uniform set and to give uniform strength, and pit holes and cracks are likely to appear.

In the building of a country road there are so many uses for side forms that they are almost indispensable. Roads have been built by digging out of the earth a trench of sufficient depth for the concrete. It is then necessary to level off the surface by means of a shovel, with an uneven contour and ragged edges resulting. By the use of side forms securely staked to line and grade, the most important finishing tool is made available—the template. It is made from a 2 by 8-inch plank, cut to the proper shape of the road, and preferably with the striking edge steel bound. The concrete may be placed into position on the road either by shovel, wheel-barrow or bucket, according to the method of mixing, and leveled off to the approximate grade by shovels. After a few feet have been laid the template is used to strike off the crown. In order to make the template more effective in its work and to get a more uniform mix, it is advisable that the concrete be sloopy wet. The objection to it is that water runs away to the sides and down grade. Care in making tight side forms will retain it. The objection is more than over-weighed because no tamping is required and hence no walking upon the concrete, and many stones not covered in the mixer will be coated, due to the carrying capacity of the excess water. If the concrete is too dry the template is hard to move and has to be used repeatedly to give a good surface. The template should have two handles on each end so as to make easier its operation. A man at each end works it back and forth and at the same time moves it slightly forward. This side motion requires that the template be about two feet longer than the width of the road. When there is an excess of material, it is necessary to use the template as a scraper—getting the approximate shape—and go over this section again with the back-and-forth motion. By the use of a sloopy wet mixture the template worked in this manner gives the concrete sufficient tamping and brings to the top sufficient mortar to produce an even surface. If, however, the stone used in the concrete is too large,—over $1\frac{1}{4}$ inches,—the template will drag the large pieces along and leave holes behind the template.

In moving the template forward some of the larger stones are pulled from the surface and collect in front of the template, making the operation hard to perform, exposing a lot of uncoated stone, and causing water carrying cement to run off the sides. The stones should be scraped forward by a man with a shovel and deposited in the bottom of the concrete layer. In running the template over the surface a second time rich mortar collects as did the stone the first time, and has a tendency to run off at the sides. This should be scraped forward the same as the stone.

Care should be taken in moving the template forward that it is not lifted from the side forms and moved two or three inches at a time. Such an operation will leave the surface full of little undulations and make the road noisy and uncomfortable for travel.

After the template has been used the surface of the concrete is left quite wet and in a condition which will not give good results if troweled at once.

Sufficient time should elapse in order that the excess moisture will be absorbed or evaporated and then the surface

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should be troweled with a wooden float wherever necessary. The time between using the template and floating depends upon the condition of the weather, but is usually about thirty or forty minutes. Care should be taken not to overtrowel and thus bring to the surface too much fine stuff.

Troweling should be done from a bridge spanning the road and resting upon the side forms. Then there is no danger of the wet concrete being disturbed by placing planks upon it or by the finishers trying to take in too large an area without moving and stepping upon the surface. Such a bridge is cheap and has the added advantage of allowing the workmen a short cut from one side of the road to the other.

A better finish is given to the road if the surface is broomed after floating. A stable broom is used for this purpose, and works to the best advantage about two hours after the surface is floated. If the road is not too wide, the brooming can be done from each side, care being taken to place the broom lightly at each stroke, otherwise the bridge should be employed for this purpose. The last two hours' work each day is too wet to broom and part of it not ready to trowel at quitting time. This will have to be done, when the concrete is in proper condition, by the night watchman on the job.

Brooming produces sufficient surface roughness to give good foothold for horses and yet remains smooth enough to keep tractive resistance at a minimum.

When the concrete has hardened sufficiently to stand without breaking down or running; usually about two hours after laying, the side forms should be removed and the edges beveled. That is, the abrupt edge should be cut off with a shovel or may be hammered down by the back of the shovel. A direct blow should not be struck, but the shovel should be pulled toward the user as the downward stroke is made This will prevent the breaking down of the concrete beneath and will have a tendency to plaster the edge. An angle of 45 degrees is about right for the bevel, and at least a 3-inch corner should be cut off. The last 30 feet each day will have to be done by the watchman.

To be safe in case of a sudden rain, a hot sun, or high wind, at least 100 feet of canvas should be on the work When used it should not be allowed to touch the concrete. Canvas is also of advantage after brooming, when the sun is very hot or the wind high

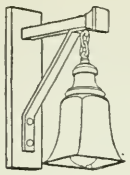
When the concrete is sufficiently hard to resist pitting of the surface, it should be sprinkled with water This cannot usually be done until the day following the laying On this date the surface should be covered with about 2 inches of dirt or sand which must be kept continually wet for one week. In most constructions a 2-inch pipe line will have to be laid and water for the concrete pumped. A T-valve will have to be placed about every 200 feet, and these can be used to connect the hose used for sprinkling.

The covering and wetting is one of the essentials for successful construction. If it is not done, and the tendency is to neglect it, the concrete will not have sufficient strength to withstand the stresses brought about by contracting while hardening and cracks will appear. These may not be harmful, but they are unsightly and may cause the road to be unjustly condemned.

This leads to the spacing of the joints along which cracks shall appear. The proper size blocks between joints is practically an indeterminate proposition. It depends upon the character of the subbase, the smoothness of the subbase, the proportions used in the concrete, the mixing of the concrete, the amount of water used, the character of the aggregates, the climatic conditions, and so forth. There is undoubtedly an economical distance to use and this will have to be determined from an investigation of what has happened in roads already constructed. Arbitrary distances have been assumed, making blocks from 5 feet to 100 feet long. In the most successful construction 25-foot blocks have been used. I believe, however that with the proper amount of care in workmanship this length can be increased and perhaps doubled.

When the last laid concrete is at least ten days old, the dirt may be removed and the road thrown open to travel.

As with all improved types of pavements, it is important that good shoulders be built. The width of road usually constructed, while sufficient to care for ordinary traffic, is "crowded" when large or fast moving vehicles pass one another, and more so at night time, when every driver is blinded by automobile lights and has to give wide berth to passing vehicles. A shoulder from two to four feet wide should be built of such material as will stand a little travel. It must be hard enough to prevent wheels from sinking in and permit them to get back upon the concrete without undue strain upon the wheels. They should be built of stone or gravel, thoroughly compacted by ramming, and should be given a slope toward the ditch of 1½ inches to the foot. If the width of the road will permit, the stone shoulder may be extended by compacting the earth as far as the ditch. The ditch should be of ample capacity, and of sufficient grade quickly to carry off all the surface water to the nearest water course. With proper care the success of the concrete road is assured.



Heating and Lighting

Plumbing and Electrical Work

Indirect Illumination—II. "Indirect Fixtures"

By Fowler Mallett

THERE are so many commercial applications of the indirect lighting theories that we can touch upon only the most conspicuous, and these only in a general way. Each fixture should be analyzed with regard to the two-fold purpose of indirect lighting, as outlined in the March issue of the Architect and Engineer, namely, softening the light to the eyes, and making a broad, even distribution. To escape any appearance of partiality, all argument as to relative merits of fixtures illustrated will be avoided, though the prospective purchaser is cautioned to distinguish carefully between patented devices of merit and those whose chief advantage is novelty, which may mean mere selling value.

Fixtures designed for indirect lighting fall into two general classes, "total-indirect" and "semi-indirect," typified by figures (A) and (B). In the former type the body is an opaque bowl of metal or composition material with reflectors inside to throw the light upward and outward; in the latter the bowl is translucent and while reflecting most of the light, allows a small percentage to pass directly through. The relative merits of these two general forms of fixtures were touched upon in the March issue.

The most efficient forms of total-indirect fixtures are made with special corrugated silver-backed mirror reflectors designed on scientific curves to give uniform distribution, though properly shaped reflectors of white enamel are sometimes employed. Sketch (A) shows

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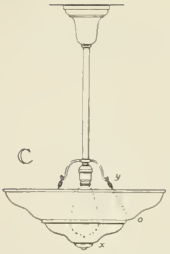


a spun metal bowl (o) with mirror reflector.

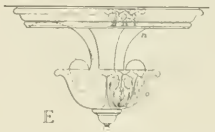
Sketch (B) illustrates a translucent reflecting bowl (o) of an "alabaster glass" with engraved decoration and is a type of fixture that is highly decorative and at the same time may be most efficient* if the transmitted light is kept small in proportion to the amount reflected. Remember that not over ten to twenty per cent of the light should be transmitted direct.

Returning to the total-indirect type, one manufacturer (C) introduces air vents at (x). The bowl (o) is made of sheet metal white-enameled inside. In the ornate forms galvanoplastic metal is used for the decorative exterior. The chains which carry the bowl are arranged with hooks at (y) so that the bowl can be dropped down on two of the chains for cleaning the interior. A clean reflecting surface is essential in indirect lighting. In fixtures where the bowl is not movable it can often be covered with a flat or curved top of plain glass as (s) in (D). This is easily wiped off without disturbing lamps or reflectors. When thus closed-in provision must be made for ventilation of the lamps, as at (z), though the vents should be contrived so the air holes will not admit dust, which is hardly possible.

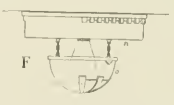
Sketch (D) shows an art glass bowl (o) which can be made with an opaque indirect reflector inside and auxiliary lamps below it to illuminate the bowl, in which case it illustrates a special form of (A). If a translucent reflector is used in the art glass bowl the auxiliary lamps are dispensed with, and the fixture becomes a special form of (B). Art glass alone is not a sufficient reflecting medium to rely upon for efficiency.

In the effort for efficiency some manufacturers have placed a "false ceiling" over the indirect bowl as shown at (m) in (D), to compensate in a measure for unfavorable ceiling conditions. It should be borne in mind, however, that broad even distribution of the light is not possible from a small reflecting surface, and the intrinsic brilliancy of (m) is so high as to make it effectually a direct lighting agency.

A variation of (D) is shown at (E). In this case a white plaster cone (n)



forms the "false ceiling" while the distance between it and the bowl (o) is reduced to a minimum. The entire fixture is of composition, and the white interior of the bowl is depended on to reflect light against the white cone, from which it is reflected into the room. In principle this fixture is somewhat like the older process of cove lighting but with the reflecting cove reduced to a hexagonal cone and the scattered light sources reduced to a single group. Being of composition, the fixture is highly decorative. It is sometimes used with a translucent bowl at (o) in which case it becomes a modification of (B) instead of (A).



Another modification of this idea is shown at (F). Here the bowl (o) is of highly translucent glass and the ceiling plate (n) is either of the same material, or in the more ornate forms, is of plaster composition.

In (G) the bowl (o) is translucent and the band (z) is lined with corrugated mirrors (p) set on an angle to reflect light upward and outward. A more pleasing form of (G) is shown at (H), an adaptation of the unit for use on low ceilings, made by shortening the distance from the ceiling and interposing a spun metal cone (n), to break up the resulting spot of concentrated light. There is nothing new in the use of the cone for this purpose, but the addition of the diffusing bowl (o) is a great advance over the old cone reflector with exposed lamps.

We have now touched upon the most conspicuous forms of indirect and quasi-indirect fixtures. In an early issue a discus-

*The reader is referred to an interesting pamphlet by Thos. W. Rolph, called "The Engineering Principles of Indirect and Semi-Indirect Lighting," which can be had by application to the Illuminating Engineering Society, Niagara Falls, Ontario.

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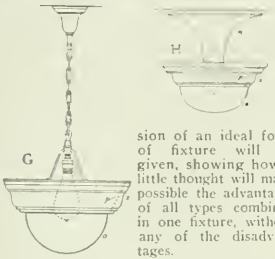

sion of an ideal form of fixture will be given, showing how a little thought will make possible the advantages of all types combined in one fixture, without any of the disadvantages.

An Eastern Architect's Impression of Los Angeles.

George D. Barnett of St. Louis, senior member of the architectural firm of Barnett, Haynes & Barnett of St. Louis and Los Angeles, thinks Los Angeles has great possibilities.

"In the East we hear so much about the wonderful development of Los Angeles and Southern California," said Mr. Barnett, "that we are not surprised when we find a large, finely-built and progressive city. What most interested me was in learning what is back of the city to account for its amazing growth and the confident predictions that it will have a million population at the next census. A glimpse of the rich agricultural districts contiguous to Los Angeles obtained from an automobile has opened my eyes to the fact that there is enough back of the city to account for everything, and that it does not depend, as many eastern people believe, on the tourist business alone."

Mr. Barnett believes that the limitation placed by the city upon the height of buildings is a good thing from many points of view. "It insures more first-class buildings and better architecture," he said. "It also accounts for the uniformity and stability of values and increase in values of property in the business section of the city. If the owner of a lot rears a 40-story building it simply piles up taxes on the adjoining property and detracts from its revenue producing powers. Los Angeles with its building height restrictions will be built up like big European cities which are noted for their many fine structures.

"Los Angeles should not attempt to copy eastern buildings," Mr. Barnett continued. "It has a splendid climate, wonderful vegetation and sunny skies, all of which call for an architectural treatment of an entirely different character from that employed in the East."

California residence architecture impresses Mr. Barnett favorably. He is delighted with the beautiful gardens, but disappointed not to see more architectural garden work.

Philippine Mahogany Fixtures in Market Street Store

Mr. L. Less, formerly of the Alexandra Jewelry Co. on Kearny street, has opened up a very beautiful jewelry store at 736 Market street, this city. Large crowds are to be seen gathered in front of his windows at any time of the day and not only are they admiring the handsome jewelry on display, but a great many comments are heard on the beautiful Philippine Mahogany fixtures and trim of the windows and store. These windows and fixtures were put in by Mr. T. D. Gilmore, the well known contractor. The workmanship is excellent and the finish is very fine. White Brothers, the pioneer hardwood lumber firm of this city, furnished the Philippine Mahogany for this store.

Coating Piles with the Cement Gun

A new use which shows some interesting possibilities for the cement gun process has been found in Seattle. The piles in the city's harbor have been subject to the attacks of what is locally termed the sand-flea. To protect the pile against this insidious pest has been a troublesome problem.

Recently the cement gun has been employed in coating some 500 piles for the Seattle Electric Company. Ordinary poultry mesh was stretched around the piles and a coating of "gunite" from 1½ to 2 in. thick shot on. The gun was operated between tides and the "gunite" set up so quickly that no trouble was experienced from the rising tide.

The results are described as satisfactory. The contract price for doing the work was $4 per pile.

Personal

Mr. G. Alexander Wright, Architect, of San Francisco has been elected President of The Technical Society of the Pacific Coast.

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Many people, many trials, and many varying conditions are responsible for even the most trivial discoveries. The use of the electric fan is, after all, only an outgrowth of Adam's discovery that even a hot breeze had a cooling effect on his perspiring brow. We don't know whether anybody ever fanned a breeze across hot stones to warm a room, but, somehow, somewhere, some bright person has thought of blowing air with an electric fan across a radiator to keep a comfortable temperature during the cold weather. The scheme is good. We tried it and we know, says a writer in the Electric Magazine.

We say tried it, and we did, with good results. Our office boy tried it, too, but he had the principal of the thing wrong. The cold spell had let up to a certain extent, the room was hot and the boy tried to cool the radiator off by letting the fan blow on it. The scheme looked good to him. Of course, the room got strat'd the efficiency of the scheme; the hotter, which, after all, only demon- radiator was cooled a lot faster; i. e., it radiated heat a lot faster, and the tem perature of that room rose like a rocket

But to get on the track again; this radiator scheme is not the only idea in connection with making cold houses

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Helping your heating system is only one of the many winter uses for the electric fan. Like the man in the fable who blew on his soup to cool it, and again on his hands to make them warmer, the fan is a means of making the temperature endurable, whether it be too high or too low for comfort.

Authority of Plumbing Inspector

A conflict of authority has arisen in Santa Barbara over the question of whether the city plumbing ordinance applies to state work. City Plumbing Inspector John Grocott has ordered Contractor John Dugan to tear out certain of the plumbing installed in the normal school on Mission ridge. The contractor refuses to recognize the inspector's authority, and while awaiting a definite answer from the attorney-general, to whom the matter has been passed, is continuing the plumbing installation.

Grocott claims that the plumbing specifications are a violation of the city ordinance, and the contractor contends that the state's plumbing regulations are superior to those of the city.

The controversy has brought from the attorney-general's office the statement, conveyed in a letter to City Attorney Butcher that the contractors on the normal school have been advised that, assuming the ordinances of the city to be reasonable and valid, they should be complied with by the state contractors.

The ordinance at issue has now been forwarded to the attorney-general, and the question now is as to whether he will regard the ordinance reasonable and valid.

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For a 200-word article setting forth the best reasons why homes should be equipped with Sliding Doors, the Richards-Wilcox Mfg. Company, of Aurora, Ill., offers a prize of $50; for the second best article, $30; and for the third best article, $20.

This contest is open to all hardware dealers, architects, contractors, carpenters and any one connected with firms in these lines, including wives, mothers and sweethearts. No partiality will be shown to anybody—your chances are just as good as the other fellow's, no matter who you are or where you live.

Names of all contestants will be withheld from judges, so write your article on a blank sheet of paper—do not sign it. Mail it to the Richards-Wilcox Co. with an explanatory letter. Your letter and paper will be given a corresponding number and your name placed on the list of contestants accordingly.

All articles must be submitted by May 15th.

The names of the winners and judges will be announced and the three best articles published.

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Some Industrial Information Worth the While

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These magic initials are not an algebraic problem, but appear on many building contracts as implying that the Plumbing, Heating and Ventilating have been let to Petersen-James & Co. This concern, although only in the field for about one year, have secured considerably more than their proportion of the large contracts.

This is made evident when the following are recalled as having been awarded to them: The plumbing, heating and ventilating of the 10-story office building at the junction of Sutter, Sansome and Market streets, Havens & Toepke, architects; the plumbing and heating of the 7-story hotel erected for the Gump Realty Co. at the northeast corner of Geary and Jones streets, Milton Lichtenstein architect; plumbing and heating of the Mensor Building at the southeast corner of Geary and Jones streets, Albert Schroepfer, architect, the plumbing and heating of the Metcalfe Building at Geary and Mason streets, Righetti & Headman, architects; the plumbing of the 6-story hotel erected for Mr. Behlow at the corner of Montgomery and Clay streets, Ralph Warner Hart, architect; the heating of the 5-story hotel building erected for the Franklin Realty Co. at Larkin and Hyde streets, August Nordin, architect; the heating of the 6-story hotel for Kane & Yore at O'Farrell and Jones streets, Hladik & Thayer, architects; the plumbing and heating of the St. Catherine Apartments, Jno. Rosenfeld's Sons, proprietors, at Bush and Polk streets, W. H. Crim, Jr., architect; the plumbing of the 5-story hotel for the Hind Estate Co. at Sixth and Natoma streets, Chas. C. Frye, architect; the plumbing of the 5-story hotel erected by Jos. H. H'Jul at Post and Larkin streets, Falch & Knoll, architects; the heating of the 6-storv hotel building for R. S. Brown at Post street, between Mason and Taylor streets Creighton Withers, architect; and the heating of the 5-story apartment building for Mr. Sockoloh at Sacramento and Buchanan streets, Joseph Cahen, architect.

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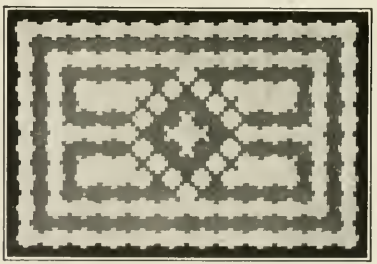

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Indiana Chapter Favors Abolition of Competitions

It is reported that the Indiana Chapter of the American Institute of Architects adopted at a recent meeting a resolution authorizing a committee to conduct a campaign with the object of eliminating competitions among architects in the designing of large buildings. It is stated that the resolution does not take any objections to contests in which the plans are judged by an impartial jury, but it is insisted that a decision given by one man as to the merits of the plans submitted is unfair, and to that method decided objections are taken. It was announced at this meeting that a bill providing that all architects in the State of Indiana be licensed will be presented to the State Legislature at an early date.

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A Pioneer in Fire Proof Construction

The Architect and Engineer, having been attracted by the recent erection of a factory at Tenth and Howard streets, San Francisco, for the manufacture of Structural Sections to be used in building and known as the Steel Monolithic System, sent one of its representatives to interview the company's Engineer, Mr M. F. McCarthy, and the following conversation ensued:

Architect and Engineer: Who is the inventor of this new system?

Mr. McCarthy: I am the Inventor and the California Steel Monolithic Company are operating under my patents.

Architect and Engineer: Is this your first venture in the field of fireproof construction?

Mr. McCarthy: No, indeed! I may be considered as a Pioneer in this field. My original patent for fireproof building was granted on July 7, 1891, and this patent was the basic one for the use of metallic mesh or strands extending over and drooped between beams and imbedded in concrete.

Architect and Engineer: Is not this the system almost universally used in reinforced concrete construction?

Mr. McCarthy: Yes, and it is on my patent and details that a majority of the big buildings have been constructed, including the McAdos Hudson Terminal Building, the N. Y. Central and Panna Depots, the new Standard Oil Building, the New York Tribune Building, the Jacksonville, (Florida) Arsenal, and hundreds of others in the East, as well as the Fairmont, Palace and St. Francis Hotels, the Failing Building and nearly all steel frame buildings in San Francisco.

Architect and Engineer: Do you consider your new System in advance of the other methods so generally used?

Mr McCarthy: I do most emphatically. The Steel Monolithic System manufactured in Sections, is so far ahead of the old method of reinforced concreting as well as any of the Unit Systems employing brick, terra-cotta blocks and tile and concrete blocks and reinforced concrete) that there can be no comparison.

Architect and Engineer: In what particular respects do you claim that the Steel Monolithic System is superior?

Mr. McCarthy: The old systems, under the light of modern experience, seem to have served their time and outgrown their usefulness. They seem now to be cumbersome, intricate and wasteful, without possessing the yielding qualities or structural bond which is so essential. They entail high cost and it has proven to be impossible to secure satisfactory, economical and good structural results.

Architect and Engineer: Then your new System is a radical departure from the old lines?

Mr. McCarthy: Decidedly so. The Steel Monolithic System has revolutionized even the most modern methods where steel can be used as a basic bond. By using the Monolithic Sections (which are adapted for walls, floors, partitions, roofs, ceilings, etc., for any class or style of building) you secure a great reduction of weight, a more rapid construction, a greater non-conductiveness of fire and moisture (which also means a dry healthy building), besides saving from 15% to 33 1-3% on the cost of the building and having a structure when completed that is unequaled for the beauty of its appearance.

Architect and Engineer: Is this saving alone in the cost of materials?

Mr. McCarthy: No, it comes also from the economy in the use of materials and I might say, the saving in rates of insurance as well.

Architect and Engineer: Would a general adoption of this System increase the amount of building operations?

Mr McCarthy: It will certainly help promote building trade conditions both structurally and financially. Many property owners are at present deterred in starting on building operations by reason of the great cost and also of their inability to secure satisfactory loans on brick and reinforced concrete buildings. A Steel

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Monolithic building would by reducing the construction cost enable a Capitalist or property owner to erect a Class A building where before he had only considered Class B. or Class C and he would, also, find it easy to secure a larger loan at a lower rate of interest on a steel structure of this character.

Architect and Engineer: What is the method of securing these Sections to the frame, piers, etc.

Mr. McCarthy: The Sections for the curtain or enclosure walls in steel frame buildings, reach from story to story and rest on the steel framework (known as the Shelf Construction) and are bolted together and also bolted to the steel frame. When steel frames are not used, piers, buttresses and pilasters are provided in the Sections wherever the loads are concentrated.

Architect and Engineer. Does the Steel Monolithic System admit of decorative effects?

Mr. McCarthy: Yes, when in plastic state any material or ornament can be added and these form a surface which admits of any style of carving or decoration.

Architect and Engineer Have you made a beginning yet in your construction work?

Mr McCarthy Yes, we have three buildings already under way

Architect and Engineer Do I understand you to say that in your new System the steel is more fully protected from fire?

Mr McCarthy I am very glad you asked this question Never before in the history of building has the steel frame been so well protected

Architect and Engineer How do you accomplish this protection?

Mr McCarthy: In the first place we provide a recess in the Sections that encase the steel which forms the enclosure walls or partitions We pour a special compound in this recess that becomes hard around the steel work This compound will not crack, fray or fuse under a hot fire. I have made many tests of this material and have found that the metal work would remain cool for a period of three or four hours while 2,000 to 3,000 degrees of heat were applied on the outside of the material.

You will bear in mind that in nearly all fires the metal work failed by reason of the heat transmitted through the material which was supposed to protect the metal or failed by reason of the materials cracking or falling away at a low degree of heat or before the combustible materials used in or stored in a building were consumed. It is plain that if we can keep the metal work of the structure cool we will sustain the structure through any attack of fire. It was by reason of this feature that the Underwriters' Insurance have offered to give a very low rate.

Architect and Engineer In the great fires which have occurred, such as Baltimore, San Francisco, Chicago, what would have been the result if the Steel Monolithic System had been used?

Mr McCarthy: The protection of the steel frame would have caused the structural portion of the buildings to have stood intact, which means that these buildings would have withstood and even checked the spread of the fire

TO WHOM IT MAY CONCERN

C. F. Pratt is no longer in the employ of the Golden Gate Brick Company and is not authorized to collect any bills or transact any business for the above named company from this date, April 4 1913. Signed FRANK REHORN, President.

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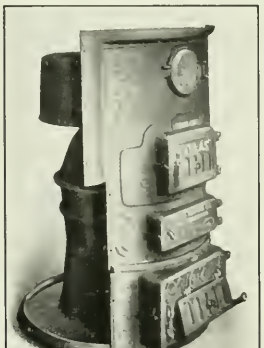

The "Atlas" Warm Air Furnace

The "Atlas" warm air furnace, controlled on the Pacific Coast by the Atlas Heating and Ventilating Co., Inc., of San Francisco, is finding favor with architects for use in residences, schools, etc., where a thoroughly durable and economical heater is required. This heater is fitted with heavy return flue, steel or cast iron radiator, through which all smoke and gases are obliged to pass, thus utilized all available heat. This radiator can be easily cleaned and is positively gas tight. This heater is fitted with the "Atlas" patent triangular revolving grate which is constructed so as to leave a free circulation of air which secures perfect combustion and prevents premature burning out of parts. The "Atlas" Furnace has been installed in District Attorney Fickert's residence, of which E. T. Foulkes was the architect, in the Griffith residence (Willis Polk & Co., architects), besides many other similar buildings.

The Atlas Heating & Ventilating Co., Inc., report a successful year in their heating and ventilating business, having satisfactorily executed some of the largest contracts in San Francisco and vicinity, among which may be mentioned the new Mt. Zion Hospital (J. E. Krafft, architect), where they furnished the heating and ventilating systems; the ventilating system in the Alcatraz Federal Prison; the heating of the Farmers' & Mechanics' Bank, Sacramento (Chas. S. Kaiser, architect); heating and ventilating of St. Paul's Church, Oakland (Benjamin G. McDougall, architect), and Howard St. M. E. Church, San Francisco (McCall & Wythe, architects), and the heating to the new Sommer & Kaufmann Building on Market St. (Cunningham & Politeo, architects), and the hot water heating system of the Herbert Law residence.

St. Patrick's Day

It was the 17th of March, and the floor of the Builders' Exchange had quite a sprinkling of shamrocks. One of the happiest men present was Andy Lynch, one of San Francisco's leading contractors. Andy called everybody's attention to the welcome rain, which was falling.

"God is good to the Irish," he said.

Some of the wags decided to play a joke on Andy whose big yellow auto stood in front of the building.

A five-pound package of green color was secured at a nearby material store, and the powder was sprinkled liberally over the body and seat of the machine. The rain did the rest.

As the contractors gathered around, laughing, one, of Milesian ancestry—a plasterer said:

"Orange and green will carry the day."

Andy came out, and—well, we won't print what he said, but, if you see Andy driving a bottle green auto in the near future, don't say St. Patrick in his hearing.

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The Latest in Wall Beds.

The very latest thing in wall beds has been developed and placed upon the market by the Ideal Wall Bed Company, which has offices and show rooms in the Phelan building, San Francisco. The promoters are about to incorporate as the California Wall Bed Company, with its manufacturing plant and main office in San Francisco.

The bed differs from any heretofore in use in that it is of standard size, namely four feet wide and six feet, four inches in length. Yet with its exceptional size the Wall recess required is actually smaller than that used for any other similarly constructed bed. Something like five square feet of valuable space is saved by the installation of every bed of this type. To the apartment house builder, where every foot of room means added expense or increased income, this feature must necessarily appeal. It is estimated that an apartment house of 50 or 60 rooms equipped with the California bed can have at least two, if not three, more rooms than the same size building that is equipped with some other type of patent bed.

When let down the bed locks itself automatically and cannot fold up until the lock is released. The weight which holds the bed in position is a part of the head rest or beam, made of steel is sanitary and clean at all times.

The show rooms are on the tenth floor of the Phelan building and architects and owners are cordially invited to call and witness a practical demonstration of the bed.

"Better Buildings"

The American Sheet and Tin Plate Company of Pittsburgh, Pa., recently issued a second edition of its popular booklet entitled "Better Buildings." Devoted, as the title denotes, to improvement in building, this attractive booklet is extremely interesting and valuable to those connected with building and the allied trades. It is fully illustrated and contains detailed descriptions of formed metal roofing and siding materials especially adapted for houses, public buildings churches, fireproof garages, barns, grain-bins—practically any and every kind of building no matter whether new or old. Many facts are given which cannot fail to impress those who read them with the advantages and safety gained by using metal sheets suitable for building construction. Attention is drawn to the safety from fire and lightning, strength, durability and consequent economy in the erection of buildings of steel. Throughout this booklet are facts and information concerning the latest ideas and most modern improvements in building.

Numerous excellent illustrations are given showing steel roofing, weatherproof siding, culverts, etc. A number of very useful tables of weights and measures are also given and the issue is attractively gotten up in a manner serviceable and instructive. The previous edition of "Better Buildings" proved exceedingly popular and you are advised to send for a copy of the second edition, before it is exhausted, to the American Sheet and Tin Plate Company, Pittsburgh, Pa., who will be pleased to send you a copy free if you will mention this publication.

The Vamanco Counterbalanced Door for Use in Freight Elevator Shafts.

This door is made by the Variety M'f'g Co. of Chicago and is handled here by C. Jorgensen & Co., 356 Market St., San Francisco. This door is made of corrugated steel, reinforced at center, strong steel angle frames, with extra heavy material for wearing parts. It is automatic, operates easily, and affords security. It has been approved by the National Board of Fire Underwriters. A very full descriptive catalogue has been prepared and will be sent to any of our readers who will write for same.

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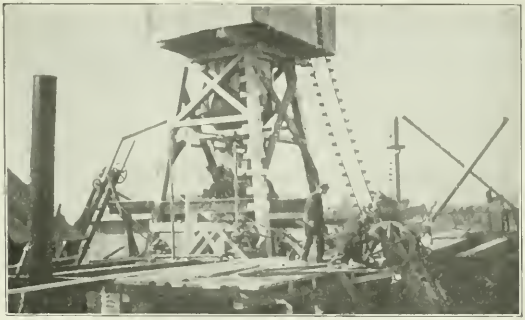

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Fess System Still Expanding

Less than a year ago the Fess Oil Burning Company established a permanent branch of its San Francisco plant in Los Angeles. Business has been so good in Southern California that another branch was deemed necessary and this time an office has been opened in San Diego. M. A. Fesler, president and general manager of the Fess System Co., has leased for a term of years the store room in the new Schneider block on the corner of Eighth and H streets, together with five thousand square feet of basement storage space.

Since establishing this office the company has installed the Fess system in the new Y. M. C. A. building, McVey apartments, Doyle apartments, Frederika home, Madison apartments, King George Hotel, McDowell anartments, Curtiss anartments, Pacific Telephone building, Howard hotel, Donohue apartments, Carnegie apartments, Palace hotel, Vue de Leau apartments, Frevert-Bledsoe building, Kirkland apartments La Mar apartments, Administration building, U. S. Postoffice.

The equipment is also used exclusively by the Pacific States Telephone & Telegraph Co., and is endorsed by leading engineers and architects, in that it utilizes the cheapest fuel—oil, aside from producing the most economical heat known.

Fire Prevention Value of Metal Roof

An interesting incident which might be used with advantage by sheet metal contractors to induce their customers to use either a good tin roof or metal tile roof instead of the cheaper so-called fireproof roofs was related in a recent issue of the Brooklyn Eagle. This incident had to do with the facts surrounding the burning of Somers' Hall in that borough on or about that date.

In its account of the fire the Eagle states that the metal tile roof saved the adjoining tenements from burning. Somers' Hall stood about 100 ft along Rockaway avenue, and about 115 ft. along Somers street, and was a two-story brick building with a Spanish metal tile roof. The roof formed a perfect hood and prevented the flames and smoke from coming in view of the hundreds of persons watching the place burn. This roof also hampered the firemen, but at the same time was probably the means of saving some three-story frame tenements that adjoined the burned building. Three firemen were injured by the falling of the roof when it could no longer withstand the intense heat.

Further facts about this incident may be had from the Meurer Bros. Co., Brooklyn, N. Y., which company furnished the Spanish metal tiles with which Somers' Hall was roofed.

Modern Overhead Carrying Systems

The present day architect of industrial plants and warehouses is often at a loss as to the proper method for the rapid storing or handling of the goods for his clients after their buildings are completed and the work of manufacturing begun.

In past years it was the practice to erect the building and then put in the carrying system, but experience has proven that costly errors are made by waiting, and that it is better to study the problem in the beginning.

To assist engineers and architects, the Richards-Wilcox Manufacturing Company, of Aurora, Ill., state that they are pleased to offer the services of experienced men in this line, who will call upon any architect or engineer who desires information on material handling. This service is gratis.

The Richards-Wilcox Company recently completed an extensive trolley carrier system at the George W. Blabon Linoleum Works, Nicetown, Philadelphia, and a plant for the Felton-Sibley Company, at Camden, N. J.

Clay Products Enterprise

The enterprise of the Los Angeles Pressed Brick Company is making such a generous display of its materials at the recent Clay Products show in Chicago, is very gratifying, for it not only proved a splendid advertisement for this successful corporation, but placed California on the clay products map. The exhibit demonstrated positively that the big Eastern plants have nothing on California. Indeed, their managers seemed surprised that so much is being accomplished out here in modern clay manufacture, especially in the warm tone face brick and the growingly popular Faience tile.

How the Los Angeles company happened to exhibit in Chicago and just what was accomplished there is best told by the firm's Vice-President, Howard Frost. He says:

"This year's Clay Show was again fortunate in being held in Chicago, one of the world's greatest markets for clay products, and during the annual conventions of the National Brick Manufacturers Association as well as numerous other allied organizations.

"The writer was so impressed with last year's exposition that he decided that the next one would not be without an exhibit from the Pacific Coast. This our firm did to such good effect that we received congratulations on every hand and were credited with having one of the most complete, attractive and interesting displays shown. In brief, our exhibit was aranged as follows: On the left of entrance a panel treatment of nine different colors of enameled brick with inset of specially designed Faience tile, the opposite wall was made up of

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various shades of standard and Roman size pressed brick, separated by a display of Faience tile similar to that recently furnished for the Grill Room of Utah, the hotel in Salt Lake City. The pressed brick were laid up in Flemish, English and American bond in mortar colors harmonizing with their appearance. The rear wall was a pleasing arrangement of ruffled and impervious wire cut face brick in reds, browns, grays and copper in a variety of bonds, mortar colors and points. A generously proportioned seat combining utility with art projected from the center of this wall. The seat was laid with cream pressed brick, flat herringbone style, around brown and white mottled mantel tile. Surmounting the rear wall was a roof of red mission and Spanish tile between which was green glazed Italian tile. The base of all brick work was carried out in 6 x 9 red quarry tile. Altogether we had an exhibit that California and the Pacific Coast could well feel proud of. To correct any wrong impressions that might exist we displayed a sign which read: 'Showing that we have something besides climate.' Eastern clay manufacturers with whom the writer conversed seemed generally in hearty favor of holding the 1915 show in San Francisco—the year of the Panama-Pacific Exposition. This would undoubtedly prove a great attraction and of particular interest to Pacific Coast architects."

In New Offices

The San Francisco Metal Stamping & Corrugating Company, Theophile Lahaye, manager, is now occupying fine new offices in the front part of the addition to the plant at 2269 Folsom street, between 18th and 19th streets, San Francisco. This company is one of the most successful of San Francisco's manufacturing enterprises and has for many years supplied the building trade with high grade sheet metal work such as cornice, mission tile and galvanized iron ornamentation. Manager Lahaye is a thorough workman and an expert in metal stamping.

Concrete Docks in San Francisco

Engineer Jerome Newman of the California State Harbor Commission has submitted plans for improvements on the waterfront which involve an approximate expenditure of $6,000,000.

The drawings are for seven new piers to be constructed north of the Ferry building, running from Lombard to Powell street and from piers on the south running to pier 26.

The seven piers on the north, all of concrete, will range in length from 800 to 1080 feet, and the piers on the south will be from 580 to 680 feet long.

The northern piers will cost about $4,000,000 and the piers on the south about $1,500,000.

The plans also include three new ferry slips south of the building and one on the north.

The big piers along the North Beach, which will be capable of accommodating the largest vessels afloat, will, according to Engineer Newman, be completed by the time the first vessel passes through the Panama Canal, in October, 1913, and all the piers now projected will be completed and ready for use in the spring of 1914.

The extensive work will be paid for as the work progresses out of the $9,000,000 voted by the people for San Francisco waterfront improvements.

Jury for Alameda County Hospital Competition.

The supervisors of Alameda County have selected the following gentlemen to act as judges of the competitive plans for the one million dollar County Infirmary buildings: Dr. O. D. Hamlin, Dr. C. A. Wills, Adolph Uhl and Architect F. D. Voorhees. The supervisors have also selected Messrs. Clinton Day and Henry A. Schulze and one of these two gentlemen will be chosen by the competing architects. These, with the five supervisors, complete the jury that will make a final selection of the plans. The drawings are to be submitted May 20th.

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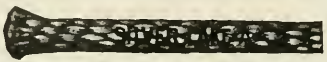

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Planning Good Roads Conference

Plans are being perfected for a conference of unusual interest and character which will be held in Eureka, California, on August 21 and 22. The meeting is for the purpose of organizing a Pacific Coast Good Roads Association, which shall in every practicable way promote and advance the cause of good roads in California, Oregon and Washington. Governor Lister of Washington, Governor West of Oregon and Governor Johnson of California have promised to attend the conference, which will be presided over by the first named of these gentlemen. It is expected that Judge J. T. Ronald, president of the Pacific Highway Association; Samuel Hill of Maryhill, Washington, and many other prominent good roads advocates will also be in attendance.

The proposed conference will present some novel features. Eureka, where it is to be held, is the largest town in the United States without a through railroad, and, except in the summer months, wholly dependent upon the sea for intercourse with the outside world. Thus, those attending the conference will have to make the journey by steamer from San Francisco or Portland, or by automobile from the north, east or south. Many of the delegates will make the trip by auto from San Francisco northward along the coast. A number of those coming from the north will turn westward at Grant's Pass, and follow the coast south to Eureka. A greater number, however, including the governors of the three states, will journey from Redding or Red Bluff across the Coast Range to Eureka. This trip will involve 167 miles of travel and will carry the visitors through some of the finest scenery in the west.

The conference is to be held under the auspices of the Humboldt Promotion and Development Committee, which will have the aid of the Automobile Club of Humboldt county in the entertainment of the visitors.

British Participation in 1915 Exposition

Mr. E. Wyldbore Smith of the Exhibitions Branch of the British Board of Trade spent several weeks in San Francisco, making inquiries respecting the Exposition and gathering information on trade matters with a view to advising his Board of Trade on the subject.

Mr. Smith is well versed in all matters connected with expositions, as indeed he should be, for he was connected with the British Government displays at Brussels, and at Turin last year, and has had wide experience in exhibition work. He gives one the impression of being a very capable man, wide awake as to everything going on, and a close observer. His only apparent fault, if fault it be, is that he will not talk.

However, Mr. Smith betrays by his manner and facial expression that he has been favorably impresed by what he has seen and learned in the course of his investigations. His report will be friendly, and there his work will end. But, reasoning a la Sherlock Holmes, it may be deduced that a British Building is assured. For the British Government acts in such matters through its Board of Trade, and that body would not have sent a representative on a twelve thousand-mile journey without first having decided to be governed by his findings.

Progress of State Highway Work

Plans have been approved and bids have been taken by the State Engineering Department Advisory Board for about forty miles of State Highway construction as follows:

Yuba County, Morrison's Crossing to Marysville, eight miles, repairing bridges; Stanislaus, Turlock to Ceres, sixteen miles, oiled concrete; San Mateo, San Mateo to Beresford, two miles, macadam concrete; Santa Clara, San Jose to Edenvale, four and a half miles, macadam asphalt; Ventura, county's southern boundary to Newbury Park, eight miles, oiled concrete.

A contract has been let to Richard Keating & Sons of San Francisco for the construction of 12.95 miles of road between Edenvale and Morgan Hill, Santa Clara County, of concrete base and bituminous top, for $55,584.

Other contracts were let as follows: Stanislaus County, from a point near Modesto to the northern county line, seven miles of oiled concrete, to Considine & Bates of Los Angeles, $32,389; Mendocino, from Ukiah to Forsyth Creek, two miles of macadam, Sawyer & White, $53,313; San Mateo, from Redwood City to the south boundary line of the county, 3.3 miles of asphaltic concrete, to S. P. Doyle, $41,720.

Associated banks of Santa Clara County have subscribed $149,000 of the next $800,000 sale of Highway Bonds, to be offered April 17th. Banks of Orange County will take $200,000 at the same sale. Bonds will be offered in lots of one or more.

Concrete Pipe for El Paso, Texas

[From the February "Cement Era"]

After a thorough investigation of the concrete sewer pipe employed in the sewage system of Los Angeles and San Diego, Cal., that pipe will be specified for the new sewer lines to be put down in El Paso, Texas. On account of the high price of the vitrified pipe the city officials of El Paso went to California to make a test of the concrete pipe used there.

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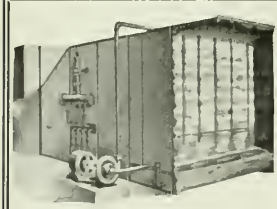

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New Tenement House Bill

A bill is pending in the California State Legislature which aims to lighten the restrictions placed by the State Tenement House law on apartments built on inside lots. The bill was introduced in the assembly by Mr. Milton L. Schmitt and is known as Assembly Bill No. 1946. It is understood to have the approval of Former Senator Burnett who was the author of the Tenement House Law. The amendments proposed are to sections 9, 10, 11, 15, 33 and 53. The first three amendments provide that an apartment house on an inside lot may cover 80 per cent instead of 75 per cent of the area of the lot and that the yard in the rear of buildings less than 60 ft. in height may be decreased 1 ft. for every 12 ft. in height of the building less than 60 ft., but shall never be less than 10 per cent in depth instead of 10 ft. in depth, as required by the present law. This provision for the minimum depth of yards also applies to corner lots. The proposed amendment to Section 15 eliminates the minimum widths fixed for lot line courts but retains the present minimum areas for the same. This change would materially help in the construction of apartments on narrow lots. The amendments to sections 33 and 53 substitute the word basement for cellar in the restrictions on the height of frame apartments, which is now limited to three stories exclusive of cellar.

Big Draw Bridge

Blue prints showing the profile and cross-section of the big draw-bridge which is to be built across the head of Suisun Bay by the Oakland, Antioch & Eastern railway, were brought to Martinez by Chairman J. H. Trythall of the Board of Supervisors.

The bridge as planned is to be 2260 feet in length, and will be built chiefly of steel and concrete with a lift span over the main channel of the San Joaquin river of 150 feet. Two spans, in addition to the lift, will be built adjoining Mallard island on the Contra Costa side, crossing the main channel of the river. From the lift northward and along the approach an easy grade will be built over the shallow waters of the mud flats to Chipps island. The electric tracks will be laid along the center of the approach and flanking the railroad on either side will be a ten-foot driveway, the road provisions being included in the granting of the permit by the War Department. It was to connect with these roadways that the Contra Costa Supervisors are soliciting the support of the Solano County Board in building the driveway approach thereto. The total cost of the approach is estimated at $2,500,000 and the railroad officials stated that every effort will be made to have it completed within three years.

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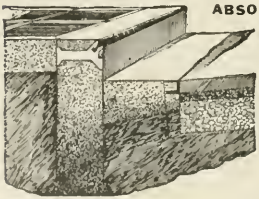

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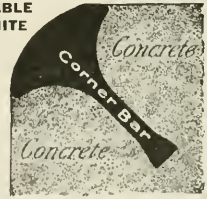

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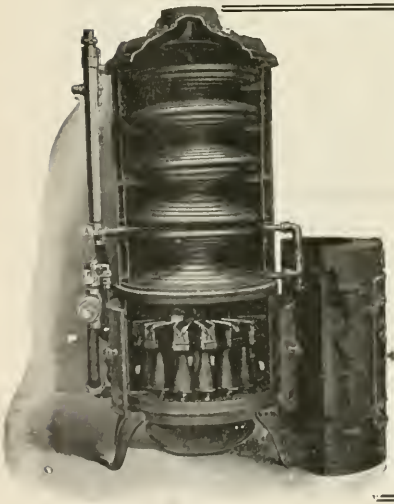

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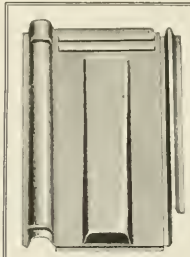
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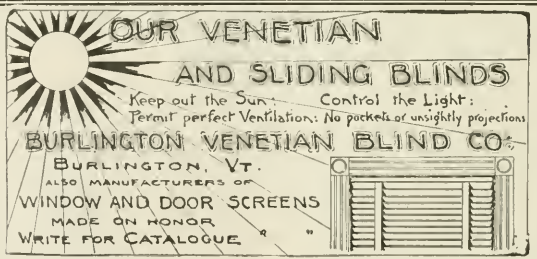

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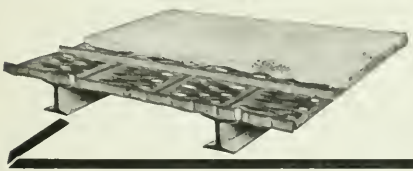

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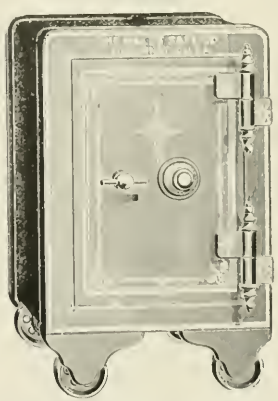
Joint Chapter Meeting

A joint meeting of the Southern California and San Francisco chapters of the American Institute of Architects was held at San Francisco Tuesday evening, April 8. The following members of the Southern California chapter attended the meeting: President J. C. Austin, Vice-President R. B. Young, Messrs. Octavius Morgan, A. F. Rosenheim, J. J. Backus, John P. Krempel, Frank D. Hudson, A. C. Martin, F. L. Rochrig, all of Los Angeles; J. J. Blick of Pasadena and W. S. Hebbard of San Diego.

Mr. J. W. Mitchell, president of the Municipal Art Commission, and an honorary member of the Southern California Chapter, was present and delivered an interesting address. There was a discussion and unanimous sentiment for the repeal of the law of 1872 requiring architectural competitions on public buildings, for amendments to the Burnett Tenement House Law and for the creation of a State Architectural Commission to handle architectural work for the state, bills for which are now pending in the legislature. A resolution was adopted asking the legislature to appropriate $1,000,000 for the erection of a State building at the Panama-Pacific Exposition at San Francisco.



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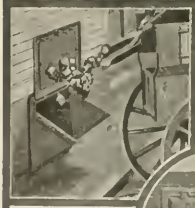

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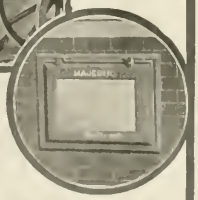

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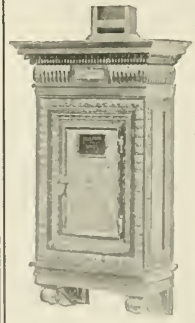

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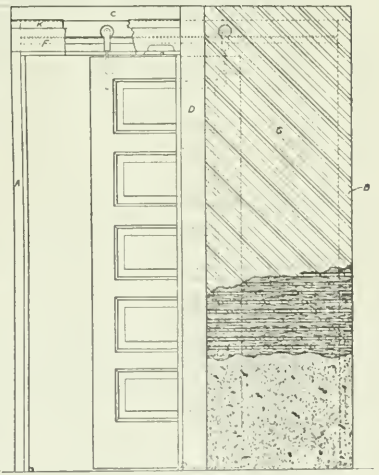

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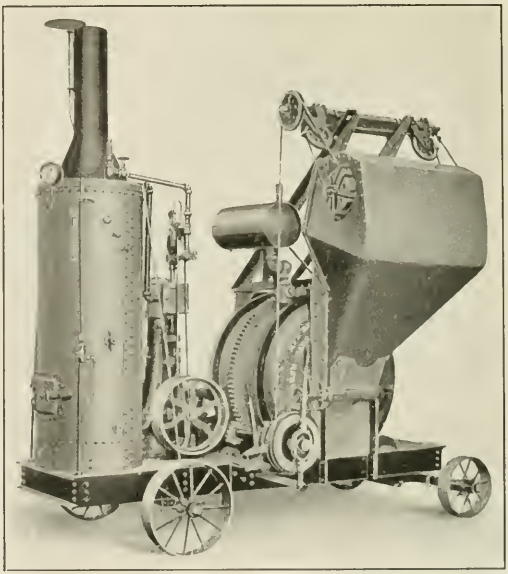

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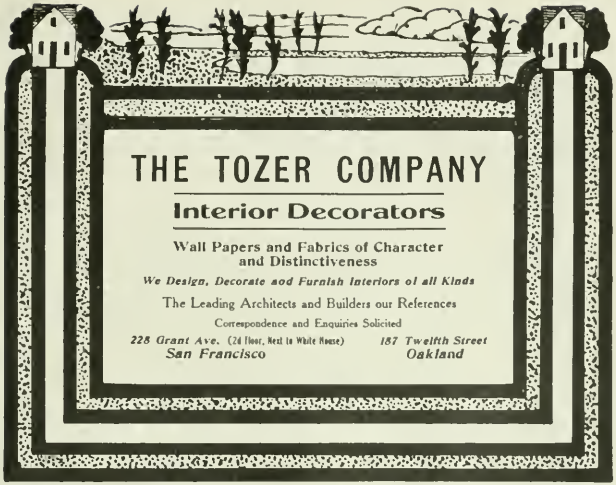
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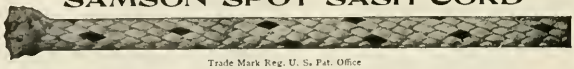
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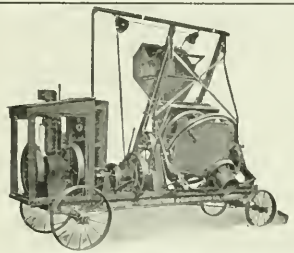

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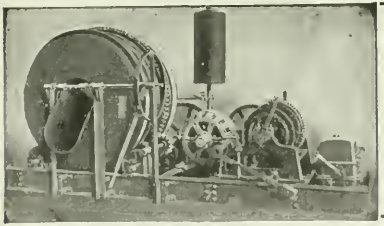

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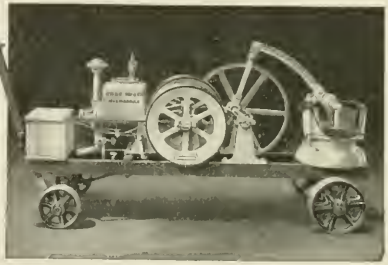

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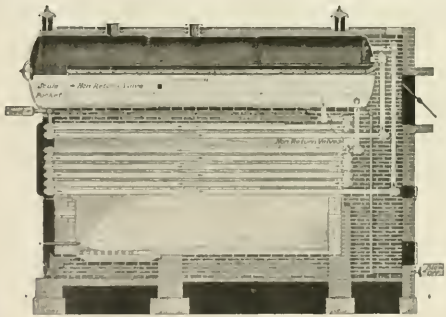

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